Therapeutic Potential of Rhizomatous Plants Used in Unani Medicare System

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Abstract

A number of plant drugs are used in different medical conditions, mainly by the practitioners of traditional medicines. Some of the plants are used as a whole, but more often their parts including leaves, stems, roots, barks, bulbs, corms, seeds, and flowers are used to prepare different dosage forms intended to be used therapeutically. They contain biologically active constituents which are often considered a basis for their therapeutic uses. The literature survey of Unani System of Medicine reveals that rhizomes are widely used in the management of a number of acute and chronic diseases such as gastrointestinal problems, skin diseases, sexual disorders, gynaecological problems, etc. Many rhizomes such as *Waj*, *Zanjabil*, *Zard Chob*, *Zarambād*, etc. have been reported to possess anti-inflammatory, antimicrobial, antidiabetic, anticancer, analgesic, antiseizure, antidepressant, and anticoagulant effects, etc. Rhizomes are used to prepare a number of pharmacopoeial and non-pharmacopoeial Unani drugs which are commonly used by the physicians in routine practice. Few of the rhizomes and their preparations investigated scientifically in recent years not only validated the claims of Unani medicine but also provided lead for newer actions and novel therapeutic application. With the advancement of technological tools and techniques, a huge number of bio-active compounds have been identified and analysed, and their biological activities have been ascertained. Therefore, it is imperative to establish the scientific basis for the biological activity and therapeutic uses of plant drugs, as they may serve as the source for the development of new drugs. Thus, the aim of present chapter is to provide updated information on the importance of rhizomatous plants in respect to their therapeutic application in Unani System of Medicine against various different diseases and also to elucidate the possible mechanism of their pharmacological actions.

Keywords

Pharmacology · Rhizome · Subterranean stem · Unani Medicine

17.1 Introduction

The name Unani is derived from a Greek word ‘Ionian’ means the knowledge of the states of human body in health and illness. Unani medicine refers to a tradition of Greco-Arabic medicine which is based on the concept of humours and temperament

given by Greek physician, Buqrat (Hippocrates; 460–370 BC), and Roman physician Jālinus (Galen). Further this system was developed into an elaborate medical system by Arab and Persian physicians such as Razi (Rhazes), Ibn Sina (Avicenna), Al-Zahrawi (Avenzor), Ibn Nafis, etc. According to Hippocrates, the human body has four primary fluids which are known as humours, viz. *Balgham* (phlegm), *Sawda* (Black bile), *Safra* (yellow bile), and *Dam* (blood). The temperament of a man is expressed by the predominance of a particular *Khilt* (humour). *Balgham* (phlegm) has been described to be cold and moist, *Sawda* (black bile) is cold and dry, and *Safra* (yellow bile) is hot and dry, while *Dam* (blood) is supposed to be hot and moist. The health is preserved until these humours are maintained in equilibrium in terms of their quantity and quality. When equilibrium of the humours becomes disturbed anyhow, the normal temperament of a person deteriorates to ill temperament resulting in illness (Ahmad 1983; Ibn Sina 2010; Kalam and Ghufran 2015). In Unani medicine different measures are adopted such as *Ilaj-bil-Ghiza* (dieto therapy), *Ilaj-bil-Dawa* (pharmacotherapy), *Ilaj-Bil-Tadbir* (regimental therapy), and *Ilaj-bil-Yad* (surgery) to regain the power, to restore humoral balance, to get rid of the disease causing matters, and to repair the structural and morphological abnormalities.

Among them pharmacotherapy is a common practice. Although drugs from all three natural sources are used to treat the patients, the medicinal plants are used predominantly (Ghani 1920). The drugs have different types of *Mizaj* (temperaments), i.e. *Har* and *Yabis* (hot and dry), *Har* and *Ratab* (hot and wet), *Barid* and *Yabis* (cold and dry), and *Barid* and *Ratab* (cold and wet). The temperament is further divided in to different subtypes, i.e. hot and dry in first, second, and third degree, etc. Drugs having specific temperament are used to ameliorate a disease with exactly the opposite temperament, for example, a person afflicted with a disease having cold and wet temperament will be advised a drug having hot and dry temperament. Thus the drugs are categorised in four *darjat* (grades or degrees) according to the severity of their *kaifiyāt* (properties). These *kaifiyāt* (properties) develop due to the presence of organic and inorganic constituents in the plants which in turn attain distinct qualities and unique medicinal properties. Some of the constituents are active and induce a response independently, and some are less active but subserve many functions. On the basis of these characters, sometimes the constituents enhance the action of another ingredient and perform synergistic action, while on certain occasions, a specific constituent counteracts the deleterious effect of another medicinally active ingredient, and, therefore, the toxic effects of the drug are minimized. Such an agent acts as a *Musleh* (corrective). When a drug required for particular action is not available, then another drug having similar property is used as a substitute (Ibn Sina 2010). Although there is an occasional tradition of using whole plant (mainly herbs), mostly particular parts of the plants are used medicinally because of their specific pharmacological action and therapeutic property (Ghani 1920). The plant parts include roots, seeds, fruits, flower, and their storage organs like bulb, corm, tuber, rhizome, tuberous root, stolon, pseudobulbs, etc. These are considered effective and safe in the management of diseases and are sometimes weighed to be more beneficial than isolated phytochemicals. Different

parts of the plant contain different bio-active compounds; thus one part of the plant could be more efficacious than another portion of the same plant for specific ailment. Physicians of Unani and other traditional medicines have clearly described that the biological activity of different parts of the plants is suitable for different diseases (Ghani 1920; Ibn Sina 2010). That is why about 80% of the world population depends on the medicinal plants for health care (Gopal et al. 2014). Several plants are used primarily for their rhizomes which have been described in Unani literatures under the title of 'root', such as *Khulanjan*, *Kutkī*, *Waj Turki*, *Zanjabil*, *Zarambad*, etc. (Ghani 1920).

Rhizome is derived from a Greek word *rhizoma* which means 'mass of roots' and *rhizóō* which means 'cause to strike root or root into the ground'; it is also called creeping rootstalks or rootstocks. Actually it is not a root but a root like modification of subterranean stem of a plant that is commonly found spreading horizontally above the soil surface or below the ground. It is propagated by vegetative process; if a rhizome is separated into pieces, then each piece may be able to give rise to a new plant (Laster Bingham 2016). This part is used as a rich source of nutrients like starch, protein, minerals, fibres, etc. (Soniya and Krishnakumar 2015) and in the presence of other bio-active compound, viz. alkaloids, flavonoids, glycosides, saponins, anthraquinones, etc. These are recommended for therapeutic uses (Khare 2007; Verma et al. 2008; Nadkarni 2009). On account of environmental changes and lack of insight of conservation of rhizomatous plants, many of them have become rare, threatened, and endangered (Nayar and Shashtri 1990; Pandit and Babu 1998) indicating that they may be obsolete over a period of time, if appropriate measures are not taken immediately to preserve them and explore the novel medicinal value that they possess. Therefore identification of the plants which have known an interesting biological activity and potential therapeutic value is imperative so that they may be cultivated for medicinal use and for preparation of various dosage forms effective in the management of different types of diseases. Different concepts and theories regarding health and diseases are present; however, no single system can assure its veracity for all health problems. With the revolution and booming advancement of medical science, although many incurable and life-threatening diseases are controlled and treated successfully by conventional allopathic medicine, there are still many thrust areas of illnesses and maladies where modern medical system has failed almost completely. Further, cost increment, dependency on diagnostic machineries, and poor clinical diagnostic trends are heavy burden on poor public living in the developing countries like India. Antibiotic resistance, increasing adverse effects, and symptomatic rather than curative efficacy of allopathic system are again disappointing and made the public seek an alternative medical system. Governments in such countries are making efforts to revive their older systems of medicine to overcome these lacunas and to fulfill the basic health care needs. In the present communication, an account of 18 rhizomatous herbs belonging to 13 different families has been documented with special reference to their common Unani name, botanical name, family, vernacular names, distribution, description of drug in Unani literature, action and uses, adverse effect, correctives, substitute, bio-active compounds, and research work carried out so far in respect of their pharmacological

and clinical studies. The formulations (pharmacopoeial) prepared from these drugs have also been mentioned. Medicinal plants contain natural chemicals, which are acceptable to human and animal systems, so the bio-active compounds present in rhizomatous plants belonging to the category of flavonoids, alkaloids, glycosides, and many others have been included, and a brief account of the recent scientific work carried out on these constituents has also been given. This will help in identifying the plants with important biological activities for which they are in use as drugs since centuries and will also help to provide lead for newer action and wide therapeutic potential. Thus, the aim of present chapter is to provide updated information on the importance of rhizomatous plants in respect to their therapeutic application in Unani System of Medicine against various different diseases and also to elucidate the possible mechanism of their pharmacological actions.

17.2 Some Importance of Rhizomatous Plants

17.2.1 Amba Haldi (*Curcuma amada* Roxb.; Family: Zingiberaceae)

17.2.1.1 Vernacular Names

Bengali: *Ada, Ama*; English: mango ginger, mango turmeric; Gujarati: *Amba Haldhar*; Hindi: *Amba Haldi*, *Amiya Haldi*, *Ban Haldi*, *Kapoor Haldi*; Kannada, *Ambaraini, Huli Arsin*; Malayalam: *Kathumachal, Mangayinji*; Marathi: *Amba Halad, Ambe Halad*; Persian: *Darchoba*; Punjabi: *Ambiya Haladi, Chunwa Haldi*; Sanskrit: *Amragandha*, *Amragandhi Haridra*, *Darvee*, *Darveebheda*, *Darooka*, *Daroo*, *Karpuraharidra*, *Padmapatra*, *Surabhidaru*, and *Suraniyika*; Tamil: *Mankayyinji*; Telugu: *Mamidi Allamu*; Urdu: *Amba Haldi* (Warrier et al. 1994; Khare 2007; Anonymous 2008b; Kirtikar and Basu 2012)

17.2.1.2 Distribution

The genus originated in the Indo-Malayan region is widely distributed in the tropics of Asia to Africa and Australia. In India the plant is found wild in parts of Karnataka, Tamil Nadu, Uttar Pradesh, and West Bengal and on the Hills of West Cost of India (Khare 2007; Anonymous 2008a).

17.2.1.3 Description in Unani Literature

Amba Haldi is a drug of Indian origin. It consists of the dried rhizome of *Curcuma amada* Roxb. of Zingiberaceae family (Fig. 17.1), which looks like *Curcuma longa* but is larger in size. It is aromatic, is bitter in taste, and has astringent properties. Laterally it is flattened, branched, longitudinally wrinkled, 2–6 cm long and 0.5–2 cm meter in diameter, remnant of scaly leaves arranged circularly giving the appearance of growth rings; leaves long; seeds white in colour. The rhizomes having 5–6 nodes, reddish yellow in colour, taste is sweet and pungent with raw mango-like odour, with short and smooth fracture; roots long, unbranched, tapering, thread-like, and yellowish-brown in colour. Morphologically it resembles ‘ginger’ and

Fig. 17.1 Amba Haldi

'turmeric' and gives odour and tastes like green mango, hence called Amba Haldi, Amragandha, mango ginger, and wild turmeric. The word 'Curcuma' is probably derived from Arabic word 'Kurkum' which means yellow colour (Ghani 1920; Khare 2007; Venugopalan et al. 2014; Anonymous 2008b; Chitra and Thoppil 2002).

17.2.1.4 Temperament

Hot and dry in second degree (Kabiruddin 2007)

17.2.1.5 Action and Uses

The rhizomes are bitter and aromatic, used for its *Muhallil-ī-warm* (anti-inflammatory), *Rādi'* (divergent), *Musakkin* (analgesic), *Muṣaffi-ī-dam* (blood purifier), *Mulattif* (demulcent), *Mujaffif* (siccative), *Jāli* (detergent), *Dāf-ī-hummā* (antipyretic), *Mutayyib-ī-dahan* (mouth freshener), *Muqawwi-ī-mi'da* (stomachic), *Mushtahī* (appetizer), *Mulayyin* (laxative), *Kāsir-ī-reyāh* (carminative), *Hāzim* (digestive), *Munaffis-ī-balgham* (concotive of phlegm), *Muqawwi-ī-qalb* (cardiotonic), *Muqawwi-ī-dimāg* (neurotonic), *Mufattit-ī-haṣāt* (lithotryptic) and *Mudirr-ī-bawl* (diuretic), and *Musaffi-ī-rukhsār* (face cleanser) properties (Anonymous 2008b; Ghani 1920; Ibn Baitar 1985; Kabiruddin 2007, 2014).

Commonly it is applied locally in the form of paste, ointment, and massage oil for bruises, sprain, wounds, boil, and inflammation which occur due to *Zarbā wa saqtā* (injuries) and also in joint pain. Internally it is used for the treatment of *Su'āl* (cough) and *Hummā* (fever) and for diseases which occur due to putrefaction of food, e.g. itching, boils, acne, eczema, scabies, etc. It is also prescribed in the management of *Warm-ī-Jigar* (hepatitis), *Warm-ī-Shu'ab al-Reya* (bronchitis), *Dīq al-Nafas* (asthma), *Fuwāq* (hiccough), *Tap Balghamī* (fever due to phlegm), *Hudār* (rheumatism), etc. (Kabiruddin 2007).

17.2.1.6 Adverse Effect

It is contraindicated in cardiac diseases (Khan 2012).

17.2.1.7 Corrective
Narangi (orange) (Khan 2012)

17.2.1.8 Substitute
Haldi (*Curcuma longa* L.), Panwar (*Cassia tora* L.), Babchi (*Psoralea corylifolia* L.) (Khan 2012)

17.2.1.9 Dose
About 2–3 g (Kabiruddin 2007)

17.2.1.10 Compound Formulations
Dawā al-Misk Mo'tadil Jawāhar wāli; Takmīd barāe Zarbā wa saktā (Kabiruddin 1935)

17.2.1.11 Bio-active Compounds
The major bio-active compounds isolated from Amba Haldi include curcumin, demethoxycurcumin, and bis-demethoxycurcumin; azulenogenic oil having pinene, α-curcumene, 1-β curcumene, camphor (α-pinene, δ-camphor), a phytosterol, starch, phenolic acids, flavonoids, curcuminoids, and terpenoids like amadannulen, difurocumenonol, and amadaldehyde. The characteristic mango odour of the rhizome is contributed by Car-3-ene and cis-ocimene present in it (Anonymous 2008a; Policegoudra et al. 2011; Durairaj et al. 2014; Gupta et al. 1999).

17.2.1.12 Pharmacological Studies
The essential oil exhibited antifungal, antimicrobial, and anthelmintic activity against tapeworms. Significant decrease was observed in total lipids and serum triglycerides of adult female rat when fed 10% mango ginger or 10% curcumin along with normal diet or sucrose-based hypertriglyceridaemic diet. The different extracts like methanol, hexane, ethyl acetate, chloroform, acetone, and aqueous and organic solvent extracts of *C. amada* showed antibacterial effect against *B. Cereus*, *E. coli*, *Staphylococcus aureus*, *Bacillus subtilis*, *Micrococcus luteus*, and *Listeria monocytogenes*. Phenolic compounds have also been investigated as antioxidants and exposed a wide range spectrum of medicinal properties such as antidiabetes, anti-inflammatory, anticancer, etc. (Nagavani et al. 2010; Prakash et al. 2007).

17.2.2 Anjebar (*Polygonum bistorta* L.; Family: Polygonaceae)

17.2.2.1 Vernacular Names
Arabic: '*Asaur-Ra'i*, *Anjubar*; Bengali: *Machutie*; Chinese: *quanshen*; English: *Snake weed*, *Bistort root*, *dragonwort*, *Radix bistorta*; Hindi: *Kuwar, Ban Natia*; Kashmiri: *Drop, Drought*; Panjabi: *Kuwar, Ban Natia*; Persian: *Hozar, Bandak*; Sanskrit: *Miromati, Nisomali*; Sindhi: *Endraru*; Urdu: *Anjebar* (Anonymous 2007a)

17.2.2.2 Distribution

The plant is found in the Himalayas from Kashmir to Sikkim and the hills of Assam (Khare 2007).

17.2.2.3 Description in Unani Literature

Anjebar consists of dried rhizome of *Polygonum bistorta* L. of family Polygonaceae and is called *Bīkh-ī-Anjebar* (Bistort root) (Fig. 17.2). It is found near the water canal and river bank. Leaves have fume-coloured hairy structures; branches are thin and reddish; flower red; root penetrates deeply into soil; rhizomes and its fiberous root are used as *Anjebar* and *Leha-ī-Anjebar* (fibers of bistorta root), its shape is compressed cylindrical, usually curved into a shrimp-like shape, both ends obtuse or slightly narrowed, rough, purple brown to dark brown externally, and reddish black in depth. It looks red internally; surface, rough, one side protuberant and the other side flat or slightly furrowed, with thick annulated striations and remnants of rootlets or root scars; fracture hard; texture roundish or nearly reniform; odour slight and taste bitter and astringent (Kabiruddin 2007; Danish et al. 2015; Khan 2012).

17.2.2.4 Temperament

Cold and dry in first degree (Kabiruddin 2007), but according to Galen it is hot (Khan 2012).

17.2.2.5 Action and Uses

All parts of *Anjebār* are *Qābiz* (astringent), *Mulattif* (demulcent), *Dāf-ī-nazlā* (anti-catarrhal), *Muhallil-ī-awrām* (anti-inflammatory), and *Hābis-ī-dam* (haemostatic) and have *Muqawwi-ī-mi'dā* (stomachic), *Muqawwi-ī-am'ā* (intestinal tonic), *Dāf-ī-qai* (anti emetic), *Dāf-ī-jaryān-ī-khoon* (anti-haemorrhagic), and *Nāf-ī-dast* (antidiarrheal) activities (Kabiruddin 2007; Khan 2012). However its rhizome is more commonly used for therapeutic purpose. It is used in *Bawāsīr Damvi* (bleeding piles), *Zahīr Damvi* (dysentery), *Nafs al-Dam* (haemoptysis), *Nazf al-Dam*

Fig. 17.2 Anjebar

(haemorrhage), *Bawl al-Dam* (uraemia), *Kasrat-ī-Tamth* (menorrhagia), *Ishāl-ī-Muzmin* (chronic diarrhoea), *Bawl al-Middi* (pyuria), and *Diq* (tuberculosis). It is also used as a mouthwash and gargle for ulcerated mouth and bleeding gums. As dusting powder it is used to stop bleeding in cases of haemorrhagic wounds (Ibn Baitar 1985; Kabiruddin 2007; Khan 2012).

17.2.2.6 Adverse Effect

The drug is harmful for the persons having cold temperament (Nasir 1880). It also affects urinary bladder adversely (Ghani 1920).

17.2.2.7 Corrective

Honey and sugar for urinary bladder and Zanjabil (*Zingiber officinale* Rosc.) for the individuals of cold temperament (Kabiruddin 2007)

17.2.2.8 Substitute

Bartang (*Plantago major* L.), Zarishk (*Berberis vulgaris* L.), Gile Armani (*Bole armenia*), Habb al-Ās (*Myrtus communis* L.) (Rafiquddin 1985; Kabiruddin 2007)

17.2.2.9 Dose

About 3–5 g (Kabiruddin 2007); 4½ gm (Ibn Baitar 1985)

17.2.2.10 Compound Formulations

Mājun Hamal Ambari Alvi Khan, *Mājun Tewaj*; *Qurs Anjebar*; *Sharbat-ī-Anjebar*; *Sufuf Istehazah* (Anonymous 2007a)

17.2.2.11 Bio-active Compounds

Many chemical constituents isolated from the rhizome include polygonic acid, ferulic acid, gallic acid, sinapic acid, vanillic acid, syringic acid, melilotic acid, tannic acid, *p*-coumaric acid, *p*-hydroxybenzoic acid, gentisic acid, salicylic acid, ellagic acids, flavonoids, anthraquinones, stilbenes, glycolipids, terpenes, and essential oil. Starch, calcium oxalate, albumin, and traces of emodin are also reported in the root. The astringent properties of the root stock are due to the presence of tannin compounds (Anonymous 2003; Nadkarni 2009; Khare 2007; Yang et al. 2003).

17.2.2.12 Pharmacological Studies

P. bistorta possesses a variety of biological activities including anti-oxidation, antimicrobial, antitumor, antiobesity, etc. The antipyretic, antioxidant, and choleretic activities of its aqueous extract were reported by Mittal et al. (2012) in experimental animals. The aqueous and ethanolic extracts of the herb inhibited both the maximal oedema response and the total oedema response in rat, when administered before the induction of adjuvant arthritis. The essential oils isolated from *Polygonum bistorta* inhibit *Bacillus subtilis*, *Melissococcus plutonius*, and *Paenibacillus larvae* (Cecotti et al. 2012). The fresh root of the plant has an anticancerous activity (Duwiejua et al. 1999). Anticancer phenolic compounds and fatty acids were identified from different fractions of methanol-water extract of *Polygonum bistorta*

L. They possessed good to strong cytotoxicity against HCCLM3 cancer cell line that demonstrated good bioactivity of this herbal plant (Intisar et al. 2013).

17.2.3 Asaruun (*Asarum europaeum* L.; Family: Aristolochiaceae)

17.2.3.1 Vernacular Names

Arabic: *Asaruun*; English: *Asarum*, *Asarabacca*, *Hazelwort*, *Wild Nard*, *Fals Colt's Foot*; Danish: *Hasselurt*; French: *Asaret d'Europe, cabaret*; German: *Baune Hazelwurz*; Italian: *Asaro baccaro*; Russian: *Copyteneuropeyckij*; Spanish: *Asarocomun*; Tibbi: *Sumbul barri* and *Nardin Barri*; Unani: *Sar'niyun* (Ibn Baitar 1985; Khare 2007; Seidmann 2005)

17.2.3.2 Distribution

It is cultivated in Europe, Persia, and Afghanistan. In India the plant is not available, but a related sp., *Asarum himalaicum*, synonym *A. canadense*, is reported from the Eastern Himalayas (Khare 2007). In India the root is imported from Iran and Afghanistan.

17.2.3.3 Description in Unani Literature

Earlier it was known as Asaruun but later on became famous as Sarun and Asarun. Its five varieties have been described in Unani literature, but the variety corresponding to *Asarum europium* L. of family Aristolochiaceae is considered more efficacious medicinally (Fig. 17.3). Although other parts of the plant possess medicinal value, the rhizome is commonly used for therapeutic purposes. It's imported from Iran, Afghanistan, Syria, Rome, and Africa. It is a herbaceous plant that commonly grows in hilly areas and attains a height of 5–6 ft. Purple color flowers appear between the leaves, near the root; rhizomes many, nodular, curved, fragrant, taste pungent (Ibn Baitar 1985).

Fig. 17.3 Asarun

17.2.3.4 Temperament
Cold in first degree and dry in third degree (Kabiruddin 2007; Ibn Sina 1998)

17.2.3.5 Action and Uses
Asaruun has a long history of medicinal use dating back to the time of the ancient Greeks. They used it for *Muharrik-ī-a'sāb* (nervine stimulant), *Muqawwi-ī-a'sab* (nervine tonic), *Muqawwi-ī-dimāgh* (brain tonic), *Mudirr-ī-bawl* (diuretic), *Mudirr-ī-haiz* (emmenagogue), *Mudirr-ī-bawl, Muqawwi-ī-gurda* (renal tonic), *Muqawwi-ī-mi'da* (stomach tonic), *Mufatteh sudad* (deobstructant), *Muhallil-ī-awarm* (anti-inflammatory), *Mulattif* (demulcent), *Musakhkhin* (calorific), *Musakkin* (analgesic), *Mowallid-ī-mani* (spermatogenic), *Muqawwi-ī-jigar* (liver tonic), *Mulayyin-ī-shikam* (laxative), *Mukhrij-ī-balgham* (concotive of phlegm), and *Mukhrij-ī-sawda* (evacuant of melanin) activities (Ghani 1920; Ibn Sina 1998; Ibn Baitar 1985). Therapeutically it is used in cold diseases mainly in the management of the diseases of *Ā'sāb* and *Dimāgh* (nervine and cerebral disorders), e.g. *Sar'* (epilepsy), *Fālij* (hemiplegia), *Laqwā* (facial palsy), *Istirkhā* (flaccidity), *Khadr* (numbness), *Nasyān* (amnesia), *'Irq al-Nasā* (sciatica), and *Rā'shā* (chorea), and also useful in *Waja' al-Warik Muzmin* (chronic lumbago), *Sudda-ī-Jigar* (obstruction in liver), *Iḥtibās al-Bawl* (retention of urine), *Iḥtibās al-Haiz* (amenorrhea), *Ikhtināq al-Raḥim* (hysteria), etc. Due to its detergent effect, it is also used in melasma locally in the form of paste (Ghani 1920; Kabiruddin 2007; Ibn Hubal 2005; Khan 2012).

17.2.3.6 Adverse Effect
Harmful for the lungs (Nasir 1880)

17.2.3.7 Corrective
Maveezaj (*Delphinium staphisagria* L.) (Nasir 1880)

17.2.3.8 Substitute
Waj (*Acorus calamus*), Zanjabil (*Zingiber officinale*), Khulanjan (*Alpinia galanga*) (Razi 1999; Nasir 1880)

17.2.3.9 Dose
About 2–5 g (Kabiruddin 2007)

17.2.3.10 Compound Formulations
Anoshdaru; *Ayārij Fīqra*; *Dawā al-Kibrit*, *Dwā al-Kurkum Kabir*; *Habb-ī-Ayārij*; *Jawārish Bisbāsā*, *Jawārish Jālinus*, *Jawārish Falāfalī*, *Jawārish Ood Shīrīn*; *Kalkalanaj Asghar*; *Mājun Bazoor*, *Mājun Harmus*, *Mājun Ghayasi*, *Mājun Jālinus*; *Mājun Kundi*; *Matbukh Maul Usool*; *Qurs Anisuun*; *Roghan Mujarrab*; *Sufuf Arastutalis* (Ibn Hubal 2005; Ibn Sina 2010; Kabiruddin 2014)

17.2.3.11 Bio-active Compounds
The volatile oil consists of asarone, methyleugenol, bornyl acetate, terpenes and sesquiterpenes (Khare 2007), derivatives of quercetin and isorhamnetin (Gracza

1967), trans-aconitic acid (Krogh 1971), carbohydrates, lipids, safrole, etc. (Wilczewska et al. 2008). The root also contains caffeic acid derivatives including chlorogenic acid, isochlorogenic acid, flavonoids, tannic acid, camphor, and sucrose (Khare 2004).

17.2.3.12 Pharmacological Studies

Asarone and its beta-isomer are found to be carcinogenic in animals (Khare 2007). (E)-asarone exerts hypolipidaemic, nematicidal, antithrombotic, mosquitocidal, and antifeedant or pesticide properties (Wilczewska et al. 2008). Local anaesthetic effect of trans-isoasaron and of iso-ethyl eugenol was tested in a clinical trial in order to compare it with benzocaine. The result showed a dose-related action for both drugs (Khare 2004).

17.2.4 Atees (*Aconitum heterophyllum* Wall. ex Royle.; Family: Ranunculaceae)

17.2.4.1 Vernacular Names

Arabic: *Atees*; Assamese: *Atieh*; Bengali: *Ataicha*; Bombay: *Atis, Atvika*; English: Indian Atees; Gujrati: *Ativishnikali ativikhani Kali, Atvasa, Ativish, Atavishnikali*; Hindi: *Atis, Atvika*; Kannada: *Athivisha, Athibage*; Kashmiri: *Hongisafed, Mohandiguj Safed*; Malayalam: *Atividayam, Ativitayam*; Marathi: *Ativisha*, *Atavish*; Oriya, *Atushi*; Punjabi, *Atisa*, *Atees*, *Bonga*, *Chitijari Sukhihasi*; Panjabi: *Bonga*, *Chitijari*, *Patis*, *Patris*, *Sukhihari*; Persian: *Atees*; Sanskrit: *Ataicha*, *Ativisha*, *Sitashringi Bangura*, *Pankura*; Tamil: *Atividyam, Atividyam*; Telugu: *Ativasa, Ativasu*; Urdu: *Atees* (Kirtikar and Basu 2012; Kabiruddin 2014; Khare 2004; Anonymous 2005)

17.2.4.2 Distribution

It is mostly confined to the belt of alpine and subalpine region of the Himalayas from Kashmir to Nepal extending to the Hills of Assam and Burma (Anonymous 2003). It is cultivated at Manali and Rahla in Himachal Pradesh (Khare 2007).

17.2.4.3 Description in Unani Literature

Atees is derived from the tuberous roots of *Aconitum heterophyllum* Wall. of family Ranunculaceae (Fig. 17.4). The root is bitter, non-toxic, and conical in shape resembling *bish* (*Aconitum napellus* L.) and looks greyish externally and white internally (Kabiruddin 2007).

17.2.4.4 Temperament

Hot and dry in second degree (Kabiruddin 2007)

17.2.4.5 Action and Uses

Often regarded as non-poisonous. It acts as *Qābiz-ī-am'ā* (astringent), *Muqawwi-ī-mi'dā* (stomachic), *Dāf-ī-zahīr* (antidysenteric), *Dāf-ī-Hummā-ī-naibā*

Fig. 17.4 Atees

(antiperiodic), *Muqawwi-ī-a'sab* (nervine tonic), *Muḥallil-ī-awrām* (anti-inflammatory), *Nāf-ī-fālij* (hemiplagia), *Laqwā* (facial palsy), *Rā'shā* (chorea), and *Sar'* (convulsion). It also has *Muharrik-ī-bāh* (sexual stimulant) and *Dāf-ī-tashannuj* (antispasmodic) activities (Kabiruddin 2007, 2014; Ghani 1920). Rhizomes are used for *Waja al-a'sāb* (neuralgia), *Laqwā* (facial paralysis), *Sar'* (convulsion), *Rā'shā* (chorea), *Zo'f-ī-mi'da* (stomach weakness), *Qai* (vomiting), *Ishāl* (diarrhoea), *Zahīr muzmin* (chronic dysentery) and *Waja'al-mafasil* (rheumatism), *Zo'f-ī-a'sab* (nervine weakness), *Zo'f-ī-bāh* (sexual weakness), and *Jaryān al-dam* (haemorrhage). For children it is effective in fever, constipation, cough, diarrhoea, and dyspepsia. During teething it is used in combination of *So'd Kufi* (*Cyperus rotundus*) and *Charaila* (*Parmelia perlata*) (Kabiruddin 2007; Ghani 1920; Khan 2014).

17.2.4.6 Adverse Effect

Harmful in cases of renal disorders (Rafiquddin 1985)

17.2.4.7 Corrective

Honey and sugar are used as corrective (Rafiquddin 1985).

17.2.4.8 Substitute

Baelgiri (*Aegle marmelos*) and Afsanteen (*Artemisia absinthium* L.) are used as its substitutes (Rafiquddin 1985).

17.2.4.9 Dose

For children ½–1 gm (powder), 3–5 gm (decoction) (Kabiruddin 2007)

17.2.4.10 Compound Formulations

Mājun Jograjgogul (Kabiruddin 2014)

17.2.4.11 Bio-active Compounds

The roots contain alkaloids, viz. atisine, heteratisane, heterophylline, heterophyllisine, heterophyllidine, hetidine, atidine, benzolheteratisine, hetisinone, F-dihydroatisine, etc. (Anonymous 2005).

17.2.4.12 Pharmacological Studies

The plant possesses potent immunostimulant properties (Khare 2007). The alkaloid atisine produces hypotension, but the whole aqueous extract of the root induces marked hypertension (Anonymous 2005).

17.2.5 Bisfāij (*Polypodium vulgare* L.; Family: Polypodiaceae)

17.2.5.1 Vernacular Names

Arabic: *Azrās al-Kalb*, *Basbāij*, *Sakeerāghli*, *Saqib al-hajar*; Egyptian: *Ashbatoon*; English: Common polypody, oak fern, wall fern; Hebrew: *Qooluqandoon*; Hindi: *Khangāli, Khankāli*; Persian: *Bist bāyā*, *Basp pāyā*, *Baspāik*, *Bispāyek*, *Tashtiwan*; Greek: *Bolikhudiyun*; Urdu: *Bisfāij* (Anonymous 2007b; Ibn Baitar 1985).

Polypodium vulgare is derived from poly (many), pous and podos (a foot), and vulgare means a common plant having many feet-like structure. Its Persian name Bist paya also has the same meaning (*Bist* = twenty and *Payā* = foot), which indicates multiple legs or foot similar to an arthropod having numerous leg called *Arbā Arbain* (millipede). The rhizome has multiple of shoots, which has a resemblance with that of the feet; therefore, the names like *Polypodium*, *Bist payā*, *Baspayek, Bisfāij*, etc. have been given. Its Hindi name *Khangāli* also indicates its multiple legs. The Arabic name of *Bisfāij* is '*Azrās al-Kalb*' which means dog's tooth, in illusion to the toothed appearance of the leaves; *Sāqib al-hajar* means 'able to penetrate stones' as it grows in hilly areas (Ibn Baitar 1985; Kabiruddin 2007; Pervaiz et al. 2012; Kalam et al. 2017).

17.2.5.2 Distribution

It is a native of Europe, also found in Turkey and America. In India, it is imported from other countries (Moran 2004; Anonymous 2007b).

17.2.5.3 Description in Unani Literature

Bisfāij consists of dried rhizome of *Polypodium vulgare* L. of Polypodiaceae family (Fig. 17.5). It has only one branch with small leaves. The plant spreads on the branches and trunk of the oak tree in a climbing nature. The rhizome which is used as drug is fibrous, knotty, and mud coloured with black or red tinged. The surface of the root is hard, hairy, rugous, and longitudinally fissured. The upper surface presents several hairs like tubercles or scaly projections. The taste of rhizome is sweetish, nauseous acrid, and astringent. In Unani System of Medicine, it is in use since thousands of years from the time of ancient Greco-Arab physicians like Theophrastus, Dioscorides, Jālinus (131–210 A.D), Razi (850–925 A.D), Ibn Sina (980–1037 A.D), and Ishaq bin Imran (Ibn Sina 1998; Anonymous 2007b).

Fig. 17.5 Bisfaij

17.2.5.4 Temperament

Hot in second and dry in third degree (Ibn Hubal 2005; Kabiruddin 2007)

17.2.5.5 Action and Uses

The rhizome is commonly used for its *Mushil-ī-sawdā* (purgative of black bile), *Mushil-ī-balgham* (purgative of phlegm), *Mufarreh qalb* (exhilarant), *Muqawwi-ī-qalb* (cardiotonic), *Muhallil-ī-nafakh* (antiflatulent), and *Kāsir-ī-reyāh* (carminative) properties. According to Ibn Sina, it removes excess of black bile from the heart and performs exhilarant and cardiotonic properties and also removes morbid matters from the brain and whole body (Ibn Sina 1998; Kabiruddin 2007; Ibn Hubal 2005). Unani physicians used it to treat *Amrāz-ī-Qalb* (cardiac diseases), *Waja'al-Mafāṣil* (arthritis), *Bawāsīr-ī-Anaf* (bleeding polyp of the nose), *Qulanj* (colitis), and *Iltawa-ī-Ā'sāb* (tortuosity of nerve). It is found effective in *Amraz-ī-Sawdavia* and *Balghamia*, e.g. *Sar'* (epilepsy), *Malikholia* (melancholia), *Rā'shā* (chorea), *Kābus* (nightmare), *Sarsam Barid* (meningitis due to cold), *Ḍīq al-Nafas* (asthma), *Tawahhush* (anxiety), *Su'āl* (cough), *Warm-ī-Tajāwīf Anaf* (sinusitis), *Warm-ī-Luhāt* (Uvulitis), *Qarha-ī-mi'dā wa Ashnā-ī-'ashri* (peptic ulcer), *Bawāsir* (haemorrhoids), *Juzām* (leprosy), *Warm-ī-Rahim Bārid* (metritis due to cold), *Waja'al-Batan* (abdominal pain), *Jarab* (Scabies), and *Shiqāq Asābā* (cracks in between the fingers) (Anonymous 2007b; Ghani 1920; Kabiruddin 2007; Ibn Sina 1998; Ibn Zohr 1986; Ibn Hubal 2005; Khan 2012).

17.2.5.6 Adverse Effect

It produces nausea and is considered harmful for kidneys and lungs (Ibn Sina 1998; Nabi 2007).

17.2.5.7 Correctives

Parsiāoshān (*Adiantum capillus-veneris*), Halelā zard (*Terminalia chebula* Retz.), and Gule surkh (*Rosa damascena* Mill.) (Ghani 1920; Nabi 2007; Rafiquddin 1985)

17.2.5.8 Substitutes

Aftimoon (*Cuscuta reflexa*), Namak Hindi (salt), and Ayārij Fiqra (*Aloe barbadensis*) (Ghani 1920; Ibn Baitar 1985; Nabi 2007; Ibn Hubal 2005) are used as substitutes.

17.2.5.9 Dose

About 7 g (powder) and 14 g (decoction) (Kabiruddin 2007)

17.2.5.10 Compound Formulations

Arq Juzām, Habb-ī-Nāfe'; *Itrifal Aftimun, Itrifal Ghudadi, Itrifal Kishnizi*, *Itrifal Sanāi*, *Itrifal Ustokhuddus*; *Mājun Chobchini, Mājun Seer Alvikhan, Mājun Ushbā, Mājun Najāh; Sufuf Chobchini, Sufuf Lājward* are the compound formulations having *Bisfāij* as one of the important ingredients (Anonymous 2007b, Kabiruddin 1935; Ibn Sina 2010).

17.2.5.11 Bio-active Compounds

Saponin glycosides, based on polypodosapogenin including osladin, phloroglucin, and ecdysteroids, have been derived from the rhizomes (Khare 2007). Organic substances such as alkaloids, glycosides, flavonoids, steroid, protein, tannins, resins, reducing sugar, and inorganic substances such as potassium, calcium, magnesium, sulphur, iron, and chloride are reported in the rhizomes. A new cycloartane triterpenoid-cyclopodmenyl acetate is isolated from the rhizomes and characterized as 24, 27-trimethyl-9, 19-cyclolanost-25-en-3ß-yl acetate. Essential oil found in roots and rhizomes contains lauric acid, succinic acids, butyric acid, and hexoic acid with methyl salicylate, isovaleric, and α-methyl butyric esters (Chopra et al. 1980).

17.2.5.12 Pharmacological Studies

CNS depressant and anti-epileptic activities have been reported by Pervaiz et al. (2012). He also reported the neuroprotective effect of the extract of the rhizome. Its protective effect in various neurological and neurodegenerative disorders, stimulatory effect on the adrenoceptors, and antioxidant properties have been proved earlier (Tobach et al. 2009). Its aqueous extract was found to possess analgesic activity by increasing the reaction time in rats (Pervaiz et al. 2012). The miticidal and insecticidal effects of the ecdysones present in the rhizome were reported topically on a wide variety of Arthropods (Jizba and Herout 1967).

17.2.6 Darunaj Aqrabi (*Doronicum hookeri* Hook f.; Family: Asteraceae)

17.2.6.1 Vernacular Names

Arabic: *Aqir*, *Darunaj Aqrabi*; Hebrew: *Qarunās*; Hindi: *Toos, Tarang*; English: *Leopard's Bane*; Persian: *Darunak, Darunā* (Ibn Baitar 2000; Kabiruddin 2014)

17.2.6.2 Distribution

It is the native to the foothills of the Himalayas in India, Nepal, Bhutan, and Tibet. In India the plant is distributed in the Himalayas at Bhutan, Lachen, Nepal, Sikkim, Tungu, and Tibet between 12,000 and 14,000 ft. (Khare 2007; Kumar et al. 2006).

17.2.6.3 Description in Unani Literature

It is one of the commonly used drugs of Unani System of Medicine (Fig. 17.6a, b). Rhizomes look like the tail of scorpion hence named *Aqrabi* (similar to scorpion), which has been taken from the Arabic word '*Aqrab*' used for scorpion (Nasir 1880; Khan 2013). It is obtained from the dried rhizomes of *Doronicum hookeri* Hook f. belonging to the family Asteraceae (Khare 2007). Rhizomes are fibrous, nodular, hard, heavy in weight and externally brown or greyish and internally white in colour; thick as finger; taste starchy, astringent, bitter, and aromatic; odour present but not specific (Kabiruddin 2014; Khan 2013).

17.2.6.4 Temperament

Hot and dry in third degree (Ibn Baitar 2000)

17.2.6.5 Action and Uses

It possesses *Muhallil* (resolvent), *Musakhkhin* (calorific), *Hāzim* (digestive), *Kāsir-ī-reyāh* (carminative), *Muhafiz-ī-janin* (protective of foetus), *Mufarreh Qalb* (exhilerant), *Muqawwi-ī-qalb* (cardiotonic), *Muqawwi-ī-mi'da* (stomach tonic), *Muqawwi-ī-jigar* (liver tonic), *Mufattit sang gurda wa masana* (lithotriptic), and *Tiryaq samum* (antidote) properties (Ibn Baitar 2000; Kabiruddin 2007, 2014). It is used in the treatment of *Zo'f-ī-Qalb*, *Khafqān Bārid* (palpitation due to cold), *Tā'un* (plague), *Fālij* (hemiplagia), *Laqwā* (Bel's palsy), melancholia, *Nafakh-ī-Shikam* (flatulans), *Waja al-Mi'da* (abdominal pain), *Dard Rahim Rehi* (uterine pain due to

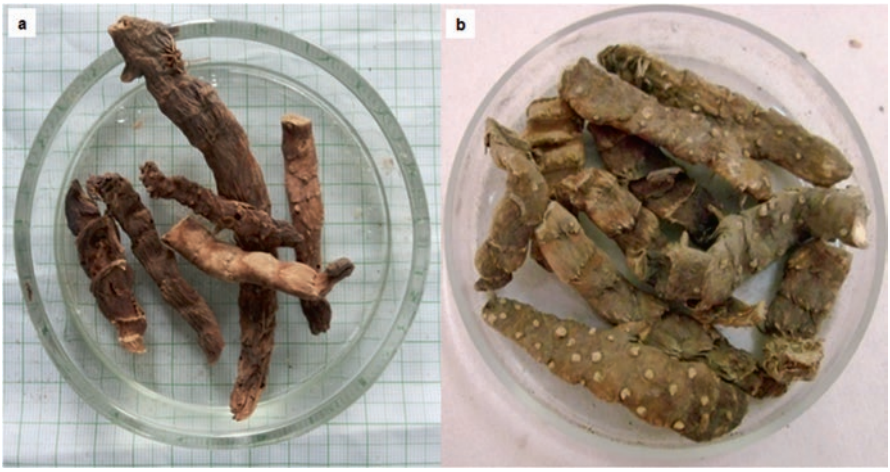

Fig. 17.6 (**a**) Darunaj Aqrabi; (**b**) Darunaj Aqrabi

accumulation of gasses), and snake and scorpion bite (Kabiruddin 2007, 2014; Ibn Sina 2010; Khan 2013).

17.2.6.6 Adverse Effect

It causes headache and is harmful particularly for the person having a hot temperament (Nasir 1880; Khan 2013).

17.2.6.7 Correctives

Bādiyan (*Foeniculum vulgare* Mill.) and *Nashāshtā* (carbohydrates) are used as correctives (Nasir 1880; Ibn Sina 2010).

17.2.6.8 Substitute

Zarambād (*Curcuma zedoaria*), Qarnful (*Syzygium aromaticum*), Suranjan (*Colichicum luteum*), and Aqer Qerha (*Anacyclus pyrethrum* DC.) are used as substitutes (Nasir 1880).

17.2.6.9 Dose

About 7.0 g (Nasir 1880)

17.2.6.10 Compound Formulations

Buzurg Dāru; *Dawa al-misk*; *Dhamarsā*; *Kaskinaj*; *Laboob Kabir*; *Mājun Alvi Khān*, *Mājun Hamal Ambari Alvi Khān*; *Mufarreh Yaquti* (Ibn Sina 2010; Kabiruddin 2014)

17.2.6.11 Bio-active Compounds

Chemical constituents of *Doronicum hookeri* have not been investigated and characterized yet. Recently 5, 7, 4′–trihydroxy-6-methoxy-flavone-5-O-α-L-rhamnopyranosyl-1 → 4)-O-α-L-arabinopyranosyl-4'-O-β-D-glucopyranoside has been reported in methanolic extract of flowers of *Doronicum hookeri* (Yadava and Clerke 2013). Flavonoids, alkaloids, saponins, cardiac glycosides (Syed et al. 2014), and phenolic contents (Gupta et al. 2011) are isolated from the rhizomes. The other constituents present in *Doronicum pardalianches* are inulin, glucose and fat otosenine (Khory and Katrak 1985; Rastogi and Mehrotra 1999).

17.2.6.12 Pharmacological Studies

Doronicum hookeri Hook f. has been reported for its antifungal (Verma et al. 2008), antibacterial, (Kumar et al. 2006), antioxidant (Gupta et al. 2011), and hepatoprotective activities. No mortality was found on the dose of 300 mg/kg to 2 g/kg (Syed et al. 2014). Recently it has been shown to produce cardioprotective, antiatherogenic, and blood pressure lowering effect (Huma 2013). Clinically the rhizome has not been studied, but a number of compound formulations in Unani Medicine which contain *Doronicum hookeri* as an ingredient have been studied, and the effect has been shown to be promising. Qalbeen, a proprietary preparation of Dawakhana Tibbiya College, AMU, Aligarh, containing *Doronicum hookeri*, was found to improve chest pain, dyspnoea, and palpitation after 90 days of treatment in the

patients of ischaemic heart disease (Mohsin et al. 2008). Fertility enhancing effect of *Habb-i-Hamal* containing *Doronicum hookeri* as one of its constituents was reported by Sultana et al. (2011). For congestive heart failure, use of *Sufuf Darunaj* (powder of *D. hookeri*), with honey, revealed that the test drug had a significant response in improving cough, breathlessness and pulmonary rales, and oedema of extremities as compared to control drug, while ejection fraction was raised equally by both test and control drug (Arish et al. 2012).

17.2.7 Īrsa (*Iris ensata* Thunb.; Family: Iridaceae)

17.2.7.1 Vernacular Names

Arabic: *Bīkh-ī-Sosan Kabood*, *Sosan asmanjuni*, *qazhiya*; Chinese: *Li Shil*, *MA lein*; English: iris or iris root; Greek: *Kasoras*; Gujarati: *Smanjoni*; Hindi: *Sosan Asmanjuni*, *Indra Dhanush*; Kashmiri: *Krishem*, *Marjal*, *Anarjal*; Persian: *Sosan Neelgun*, *Bīkh-ī-Banafsha*; Roman: *Abrimony*; Sanskrit: *Balbach*, *parseeka vacha*; Suriyani: *Aqarasosii*; Urdu: *Īrsa*. Other species are Sosan (*Iris versicolor*, *I. germanica*, *I. florentiana*, *I. pallida*, *I. foetidissima*, *I. kumaonis*, *I. pseudacorus*, *I. hookeriana*) and Sosan azad (white var.) (Kirtikar and Basu 2012).

17.2.7.2 Distribution

It is native to Nepal, Bhutan, Northeast India, Myanmar (Burma), Malaya, Sumatra, and Java. In India it is found in Temperate Northwestern Himalaya at 1500–2700 m. and from Kashmir to Himachal Pradesh. Due to the beautiful flowers, this is often grown in gardens as an ornamental plant (Khare 2007; Yabuya et al. 1997).

17.2.7.3 Description in Unani Literature

Īrsa is the rhizome obtained from *Sosan Nilgun* (*Iris ensata* Thunb.) (Fig. 17.7a). The stem of Iris bears flowers of different colours, e.g. white, yellow, blue, or purple, which cover one another. Due to the diversity of colours, it looks like *Qaus-i-Qazah* (rainbow) and has been therefore named as *Iris ensata. Iris* means 'the goddess of the Rainbow', and *ensata* means 'sword shaped' as its leaves resemble the sword. In Arabic it is called *Qazheya* which is also used for 'the rainbow'. The smell of the rhizome is like banafsha (*Viola odorata*); hence, it is also called *Bīkh-ī-Banafsha* (Viola root), though it is not a root of banafsha (Rafiqudin 1985; Ibn Hubal 2005; Afaq et al. 2011).

In Unani System of Medicine, different species of Iris are used as *Sosan* or *Bīkh-ī-Sosan* (Iris root) (Fig. 17.7a–d). The white flowered is known as *Sosan Azad* (*Iris versicolor*); and purple flowered is known as *Iris nepalensis*, *Iris hookeriana*, and *Iris germanica*; and blue flowered is known as *Īrsa* or *Sosan Asmanjoni* (*Iris ensata* Thunb.). The difference between Īrsa and Sosan is that the leaves of Īrsa (*Iris ensata* Thunb.) is narrow than the leaves of Sosan (*Iris nepalensis*). Rhizome is used for medicinal purpose which is strong, hard, knotty, and fibrous found in small pieces of different shapes, usually elongated with transverse wrinkles; bluish red externally and reddish yellow or white internally. The fragrance is pungent, and the taste

Fig. 17.7 (**a**) Irsa; (**b**–**d**) Bikh Sosan

is slightly bitter and aromatic (Kabiruddin 2007; Ibn Baitar 1985; Ibn Sina 2010; Khare 2004; Afaq et al. 2011). The dried rhizomes which are small broad, reddish in colour, thick and not easy to break, with irritation on test, are considered of best quality (Ibn Sina 2010). It should be used within 3 years before the fragrance disappears and is eaten by insects (Ibn Sina 2010; Ibn Zohr 1986; Ibn Baitar 1999; Kabiruddin 2007). Rhizomes when cut should be dried in the shade and stored with a linen thread put through them (Ghani 1920; Kabiruddin 2007).

17.2.7.4 Temperament

Hot and dry in second degree (Ibn Baitar 1985; Ibn Sina 2010)

17.2.7.5 Action and Uses

The herb has been mentioned first in *De Materia Medica* by Dioscorides (2000) and then narrated by Theophrastus and after that Arabic, Persian, and Urdu authors, such as Zakaria Razi, Ibn Sina, Ibn Zohr, Azam Khān, Ghani, etc. It has been described to be *Mushil safra wa balgham* (purgative of yellow bile and phlegm), *Munzij* (concoctive), *Jāli* (detergent), *Muhallil* (anti-inflammatory), *Musakkin*

(analgesic), *Mufatteh sudad* (deobstruent), *Musakhkhin* (calorific), *Mulattif* (demulcent), *Moattish* and *Muhammir* (rubifacient), *Mudirr-ī-haiz* (emmenagogue), *Muṣaffi-ī-dam* (blood purifier) *Munaqqi*, *Munaffis*, and *mukhrije-ī-balgham* (expectorant), *Daf-ī-su'āl* (anti-tussive), *Mulattif* (demulcent), *Mudirr-ī-bawl* (diuretic), and *Mudirr-ī-haiz* (emmenagogue) properties (Anonymous 1987; Ghani 1920; Haleem et al. 2015; Kabiruddin 2007). As mentioned in Unani literature, the rhizome is used in *Amraz-ī-balghamia* (diseases occurs due to morbidity of phlegm), e.g. *Dhāt al-Janb* (pleurisy), *Dhāt al-Ri'a* (pneumonia), *Su'āl-ī-Balghami* (productive cough), and *Ḍīq al-Nafas* (asthma). It is also used in *Rā'shā* (tremor), *Nisyān* (amnesia), *Sar'* (epilepsy), *Fālij* (hemiplegia), *Waja' al-Mafāṣil* (arthritis), *'Irq al-Nasā* (sciatica), *Dawār* (virtigo), *'Iẓam al-Tihāl* (splenomegaly), *Sol'a* (tumours), *Awrām Salib* (hard inflammation), *Sudā'*(headache), *Iḥtibās al-Tamth* (amenorrhoea), *Kalaf* (melasma), *Namash* (freckles), *Bahaq* (pityriasis alba), lentigo, *Busūr Labniya* (pimples), *Busūr* (boils), *Zarba al-Shamsh* (sunburn), etc. It's also applied as eye salve with honey, which draw out particles or foreign body from the eye. A massage of *Roghan Īrsa* (oil of Iris) prevents from rigor and chills in case of fever. Taken as a drink with vinegar, it helps those bitten by venomous creatures. It is useful for malignant ulcers; powder sprinkled over fistula promotes the growth of flesh. An application with honey also covers the bones with flesh and fills up ulcers and cleans them. If locally applied with vinegar and rose oil, it reduces headache (Ibn Zohr 1986; Dioscorides 2000; Kabiruddin 2007).

17.2.7.6 Adverse Effect

It causes headache if used for a long time and is also harmful for the lungs (Ghani 1920; Kabiruddin 2007).

17.2.7.7 Corrective

Honey is used to prevent its toxicity (Ghani 1920; Kabiruddin 2007).

17.2.7.8 Substitute

In case of unavailability of the drug, Asaruun (*Asarum europaeum*) and Zanjabil (*Zingiber officinale*) are used as substitutes of *Īrsa* (Ghani 1920; Kabiruddin 2007).

17.2.7.9 Dose

About 3–5 g (Kabiruddin 2007)

17.2.7.10 Compound Formulations

The rhizomes of *Iris ensata* Thunb. or *Iris versicolor* are one of the important constituents of many Unani compound formulations, i.e. *Aqras kundi*, *Aqras ward*; *Dawaul Khatateef* (Ibn Sina 2010), *Habb-ī-Maghz badam* (Kabiruddin 1935); *Kalkalanaj Asghar*; *Lauq Batam*; *Qantarghan Akbar*; *Qantarghan Asghar*; *Qurs Luk* (Ibn Sina 2010); *Mājun Balādur* (Ibn Sina 2010), *Mājun Rāhul Mominīn*, *Mājun Laboob* (ointment for hard swellings and acne); *Marham Khanāzīr* (an ointment for hard swellings and adenitis), *Marham Irsā*; *Roghan Balādur*, *Roghan Bedanjīr Murakkab*, *Roghan Sosan*, *Roghan Kalān* (Kabiruddin 2006);

Zimād-ī-Muhasā (A paste for acne); *Roghan Alqam*, *Roghan Irsā*, *Roghan Surkhbādā*; and *Roghan Laqwā* (Ghani 1920; Kabiruddin 1935, 2006).

17.2.7.11 Bio-active Compounds

The phytochemical constituents reported from plant are resins, sterols, phenols, terpenoids, glycoside, flavonoids, proteins, carbohydrate, reducing sugars, and polyphenols (Haleem et al. 2015; Yabua et al. 1997). Aerial parts contain xanthone glycosides; C-glycoside of apigenin and phenolic acids. Roots contain ceryl alcohol. Natural irones, the main constituent of orris oil, are obtained from different species of Iris (Khare 2007). Isoflavonoid, glycosides have also been isolated from its different species (Rahiman et al. 2002).

17.2.7.12 Pharmacological Studies

A clinical study conducted by Rahman and Salam (2015) approved its anti-inflammatory, analgesic, and antimicrobial activities in cases of cervicitis. They also found it effective in low backache, dyspareunia, abnormal vaginal odour, pruritus vulvae, and cervical discharge. It was reported to possess antibacterial and antimicrobial activities (Yabuya et al. 1997). Immunomodulatory and cancer chemopreventive effects of another species, i.e. *I. germanica*, have been reported by Nighat et al. (2009) and Wollenweber et al. (2003). A herbominiral cream of Īrsa prepared along with other drugs was proved effective in acne vulgaris by Shagufta et al. (2009). A polyherbal formulation *Zimād-i-Muhasa* acts topically as a detergent, astringent, anti-inflammatory, and antibacterial and was proved effective in acne vulgaris by Azad et al. (2012). It has also been reported to potentiate the anticonvulsant effect of sodium valproate and carbamazepine in PTZ-induced seizure in experimental animals (Katyal et al. 2012).

17.2.8 Izkhir (*Cymbopogon schoenanthus* Spreng.; Family: Poaceae)

17.2.8.1 Vernacular Names

Arabic: *Izkhir*, *Gore gyāh*; Bengali: *Agam ghās*, *Agiya ghas*, *Karankusa*; English: Camel Hay; Gujarati, *Ashkhār*, *Gandharu Ghāns*, *Pilo Valo*, *Rondso*, *Ronsdo*; *Greek*: Afridas, Yathqus, Sajilas, Toflas, Sanjunas; Hindi: *Bur*, *Gandhil*, *Khavi*, *Lamjak*, *Rohis*, *Roosa*, *Roosaghas*, *Mirchāgandha*; Kannada, *Dunllu*, *Harehullu*; Latin, *Andropogon schoenanthus*; Malayalam: *Sambharppullu*; Marathi: *Pivalavala*, *Rohish gavat*; Persian: *Chae-kashmiri*, *Kāh makki*, *Khulāl Mamoon*; Pajabi: *Agya ghās, Lamjak*; Sanskrit: *Rohishā*; Tamil: *Chooraippul*, *Kavattampillu*, *Munkipul*; Telugu: *Kamakchhi, Kassuvu*; Urdu: *Izkhir Makki* (whole plant), *Bīkh-ī-Izkhir* (rhizome), *Fuqa-ī-Izkhir*, *Shgufa Izkhir* (flower) (Said 1997; Ghani 1920; Khan 2012; Kirtikar and Basu 2012).

17.2.8.2 Distribution

Cultivated in Java, Malay, Ceylon, Burma, Mauritius, West Indies, etc. In India it is found in the warmer part, from Punjab to Bengal, and in South India (Said 1997).

17.2.8.3 Description in Unani Literature

It is a grass having fragrant root and flowers with bitter taste. Its rhizomes (*Bīkh-ī-Izkhir*) (Fig. 17.8) and flower buds (*Fuqa-ī-Izkhir*, *Shgufa Izkhir*) are used for medicinal purpose. According to Dioscorides it is of two types, one which bears no fruit and other which bears black fruit. The Arabian variety which is red in colour and has a characteristic smell is considered best and called *Izkhir Makki*. Flowers are scarlet in colour and smells like rose flower. The buds cause irritation when placed on tongue. The fragrant oil is known as *Roghan Izkhir* (Rusa oil) which is obtained from *shgufa Izkhir* (flower buds of Izkhir) (Kabiruddin 2007, Ibn Hubal 2005; Khan 2012).

17.2.8.4 Temperament

The Arabian variety is hot and dry in second degree (Ibn Sina 1998).

17.2.8.5 Action and Uses

Bīkh-ī-Izkhir: *Munzij akhlat ghaliza* (concotive of viscid humours), *Mufatteh sudad* (deobstruent), *Mu-allil-ī-awrām* (anti-inflamatory), *Kāsir-ī-reyāh* (carminative), *Mulattif* (demulcent), *Qābiz* (astringent), *Moharrik* (stimulant), *Mu'arriq* (diaphoretic), *Mudirr-ī-bawl* (diuretic), *Mufattit-ī-haṣāt* (litho-tryptic), *Mudirr-ī-ṭamth* (emmenagogue), *Muqawwi-ī-mi'da* (stmachic), *Mulayyin* (mild laxative), *Muqawwi-ī-bāh* (aphrodisiac). *Shagufa Izkhir* has an astringent property. The oil exhibits *Muhammir* (stimulant), *Kāsir-ī-reyāh* (carminative), *Dāf-ī-tashannuj* (anti-spasmodic), *Mu'arriq* (diaphoretic), and *Musakkin-ī-alam* (analgesic) properties (Ibn Baitar 1985; Ibn Sina 1998; Kabiruddin 2007; Khan 2012). As a *Munzij Balgham* (concotive of phlegm), the rhizome is used in *Amrāz-ī-Balghamī*, e.g.

Fig. 17.8 Izkhir

Fālij (hemiplegia), *Laqwā* (facial paralysis), *Sar'* (convulions), *Ra'sha* (tremor), *Istirkhā* (flaccidity), *Tashannuj* (spasm), *Ghasayān Balghamī* (syncope), and *Zo'f-ī-Mi'da*. In genitourinary affections it is used in cases of *Iḥtibās al-Tamth* (amenorrhoea), *Iḥtibās al-Bawl* (retention of urine), *Sang-ī-Gurdā* (renal calculus), *Sang-ī-Masānā* (vesical calculus), etc. It is applied locally in the form of *Zimād* (paste) for *Warm-ī-Mi'da* (gastritis), *Warm-ī-Jigar* (hepatitis), *'Izam al-Tihāl* (splenomegaly) and insect bite and as massage in *Waja'al-Mafāṣil* (rheumatism), *Waja al-A'sab* (neuralgia), *Dard-ī-Badan* (bodyache), *Waja'al-Khasira* (backache), *Kharish-ī-Badan* (body itching), etc. For the treatment of *Dard Dandan* (toothache), it is applied locally. Due to its *Qābiz* (astringent) property, flowers are useful in *Nafs-ud-Dam* (haemoptysis), *Waja al-Mi'da* (gastralgia), *Warm-ī-Mi'da* (gastritis), *Warm-ī-Jigar* (hepatitis), *Waja'al-Kulya* (nephralgia), *Bawl al-Dam* (haematurea), and *Warm-ī-Miq'ad* (inflammation of the anus) (Ghani 1920; Ibn Hubal 2005; Ibn Sina 1998; Ibn Zohr 1986, Kabiruddin 2007).

17.2.8.6 Adverse Effect

Causes headache (especially the non-Arabian variety often causes heaviness in the head) (Ghani 1920; Ibn Sina 1998).

17.2.8.7 Corrective

Sandal Safed (*Santalum album*) and Gulab (*Rosa damascena*) (Nasir 1880)

17.2.8.8 Substitute

Aqer Qerhā (*Anacyclus pyrethrum* DC.), Mirch Seyāh (*Piper nigrum*), Bālchhar (*Nardostachys jatamansi*), Zāfarān (*Crocus sativus*), Qust (*Saussurea lappa*), Rāsan (*Inula racemosa*), and Chiraitā (*Achyranthes aspera*) are used as substitute (Ghani 1920; Nasir 1880).

17.2.8.9 Dose

About 5–7 g (Kabiruddin 2007)

17.2.8.10 Compound Formulations

Dawā al-Luk akbar, *Dawa al-Kurkum*; *Mājun Dabidul Ward*, *Roghan Abhal*, *Roghan Izkhir*, *Roghan Nārdin*; *Tabikh Māul usool* (Ibn Sina 2010; Kabiruddin 1935, 2006, 2014)

17.2.8.11 Bio-active Compounds

Fresh leaves contain an essential oil, whose main constituent is citrol or citral. The oil is of a pale sherry colour with a pungent taste and intense verbena-like odour (Said 1997). It contains a series of methyl ketones, along with limonene 19.5, camphene 8.0%, and a group of oxygenated sesquiterpenes, the major being elemol 4.5%.

17.2.8.12 Pharmacological Studies

The fragrant oil is known as Rusa oil and is used as a substitute for rose oil. It exhibits antioxidant, antimicrobial (Khadri et al. 2010), anthelmintic and insecticidal (Katiki et al. 2012), acetylcholinesterase inhibitory activity (Khadri et al. 2008), and antispasmolytic (Pavlović et al. 2017) properties.

17.2.9 Khulanjan (*Alpinia galanga* Willd.; Family: Zingiberaceae)

17.2.9.1 Vernacular Names

Arabic: *Khawlinjan, khulanjan kabir*; Bengali: *Kuanjan, kurchi vach*, *mahabhari vach*; English: Greater galangal, java galangal, colic root; Greek: *Tefilun*; Gujarati: *Kolinjan*; Hindi: *Kulanjan*, *kulinjan*, *bara kulinjan*, *sugandh wach*, *sthuulagranthi*; Kannada: *Doddarasagadde*, *dhumarasme*, *rasmi*, *sugandh vachi*; Marathi: *Bari pan ki jad*, *kosht khulijan*; Persian: *Khisrudaru-i-Kalān*, *khusrudaru*, *jauz-ī-resha*; Sanskrit: *Aruna*, *elaparni*, *sthuulagranthi*, *sugandh vach*, *tikshnmula*; Sinhalese: *Aratta*, *kaluwala*; Hebrew: *Qulijan*; Tamil: *Anandam*, *arattai*, *Ardubam*, *kandanguliya;* Turki: *Qarghat*; Urdu: *Khulanjan* (Jayaweera 1981; Khan 2013; Said 1997)

17.2.9.2 Distribution

Occurs throughout India, China, Malaya, and Ceylon (Jayaweera 1981) and extensively cultivated in Bengal and North India (Chopra et al. 1992).

17.2.9.3 Description in Unani Literature

Khulanjan (*Alpinia galanga* Willd.) is an Indian plant (Fig. 17.9). The rhizome which is used medicinally is nodular, branched, and fragrant. It is reddish black externally and yellowish white internally; smell is pleasant; taste is pungent and bitter; light in weight; fruits are about ½ inch long, constricted in the middle and contain 3–6 seeds (Said 1997; Kabiruddin 2007).

Fig. 17.9 Khulanjan

17.2.9.4 Temperament
Hot and dry in second degree (Kabiruddin 2007)

17.2.9.5 Action and Uses
Rhizomes have *Mulattif* (demulcent), *Musakhkhin* (calorific), *Jāli* (detergent), *Kāsir-ī-reyāh* (carminative), *Mufarreh qalb* (cardiac tonic), *Muqawwi-i-a'sāb* (nervine tonic), *Munaffis-ī-balgham* (expectorant), *Mudir-ī-luāb-ī-dahn* (sialogogue), *Muqawwi-ī-bāh* (aphrodisiac), *Mutayyeb-ī-dahan* (mouth freshener), *Muqawwi-ī-mi'da* (stomachic), *Hāzim* (digestive), *Moharrik daurān-ī-khoon* (circulatory stimulant), *Mu'arriq* (diaphoretic), and *Muḥallil-ī-awrām* (anti-inflammatory) (Khan 2013; Kabiruddin 2007; Ibn Baitar 1986). It is used in *Amrāz-ī-balghamiyā wa sawdaviā* (diseases which occurs due to excess of phlegm and black bile), viz. *Hudār* (rheumatism), *Qulanj Rehi* (intestinal colic due to flatulance), *Waja' al-Kulya bārid* (nephralgia due to cold), *Luknat-ī-Zabān* (stammering), *Su' al-Haḍm* (dyspepsia), *Waja'al-Mi'da* (abdominal pain), *Boht-us-Saut* (hoarseness of voice), *Su'āl* (cough), *Dīq al-Nafas* (asthma), *Khushunat-ī-Halaq* (sore throat), *Zo'f-ī-Bāh* (sexual debility), *Salsel al-Bawl* (dribbling of urine), *Sartān* (cancer), and Khanāzir (scrofula). Due to its detergent effect, it is applied locally for *Kalaf* (melasma) (Khan 2013; Kabiruddin 2007). It has also been described to be effective in bronchitis, tubular glands, and kidney diseases (Kirtikar and Basu 2012).

17.2.9.6 Adverse Effect
It causes headache and is considered harmful for the lung and heart especially for the persons having a hot temperament (Nasir 1880).

17.2.9.7 Corrective
Sandal (*Santalum album*) and Tabāshir (*Bambusa arundinacea*) (Nasir 1880)

17.2.9.8 Substitute
Qurfa-ī-Qarnful (bark of clove); Darchini (*Cinnamomum zylanicum*) (Ibn Baitar 1986; Razi 1999)

17.2.9.9 Dose
About 2–3 g (Kabiruddin 2007)

17.2.9.10 Compound Formulations
Habb-ī-Adrak, *Habb-ī-Ashkhar*, *Habb-ī-Asgand*; *Halwa-ī-Maghz sar Kunjashk*, *Halwa-ī-Sa'lab*; *Jawārish Jālinus*, *Jawārish Kāfoor*, *Jawārish Kundur*, *Jawārish Ood Shirin*; *Mājun Feroznosh Mumsik*; *Roghan Gulchakan* (Kabiruddin 1935, 2006; Ibn Sina 2010)

17.2.9.11 Bio-active Compounds
The rhizome of greater galangal (*Alpinia galanga* L.) has essential oil, e.g. methyl cinnamate, cineol, camphor, and d-pinene. The seeds contain two potent antiulcer

principals, viz. 1′-acetoxychavicol acetate and 1′-acetoxyugenol acetate, caryophyllene oxide, and caryophyllenol I and II (Anonymous 2005). According to some experts, galangal root contains three different compounds, i.e. campheride, galangin, and alpinin (Said 1997).

17.2.9.12 Pharmacological Studies

Ethyl alcohol extract of the plant showed anti-inflammatory activity. The ethanolic extract also showed significant antiulcer activity in rats, which has been attributed to the antisecretory and cytoprotective properties of the plant. Unani physicians used *A. galanga* as a sex tonic. In mice, the drug caused a significant gain in the weight of sexual organs and increased sperm motility and sperm count (Khare 2007). Khan et al. (1994) have reported its significant effect on sexual behaviour. It has been found to be moderately effective as an anthelmintic against the human *Ascaris lumbricoides* (Kaleysa 1975). Ethanolic extract of rhizomes exhibited gastric antisecretory, antiulcer, and cytoprotective effects in rats (Al-Yahya et al. 1990). Thomas et al. (1996) and Itokawa et al. (1987) reported antibacterial and antitumor activities in experimental models.

17.2.10 Kutkī (*Picrorhiza kurroa* Royle ex Benth.; Family: Scrophulariaceae)

17.2.10.1 Vernacular Names

Arabic: *Kharbaq*; *Hindi*; Bengali: *Katki*, *Kuru*, *Kutkī*; Bombay: *Balkadu*, *Kali Kutkī*; Chinese: *Hu Huang Lien*; Deccan: *Kali Kutkī*; Gujarati: *Kadu*; English: *Hellebore*; Gujarati: *Kadu, Katu;* Hindi: *Kutkī*, *Katki*, *Kuru*; Kannada: *Katuka rohini*; Malayalam: *Kaduk rohini*, *katuka rohini*; Marathi: *Kutaki*, *kalikutaki*; Oriya: *Katuki*; Panjabi: *Karru, kaur*; Persian: *Kharbaq Hindi*; Tamil: *Katuka rohini*, *katuku rohini*, *kadugu rohini*; Telugu: *Katukarohini*; Urdu: *Kutkī* (Anonymous 2007c; Kirtikar and Basu 2012)

17.2.10.2 Distribution

It is found in alpine Himalayas from Kashmir to Sikkim at 9000–15000 ft. and also found in Pakistan, Bhutan, China, and Nepal (Kirtikar and Basu 2012; Maria et al. 2015).

17.2.10.3 Description in Unani Literature

Kutkī consists of the dried rhizome and root of *Picrorhiza kurroa* Royle ex Benth. It belongs to the family Scrophulariaceae (Fig. 17.10). In Greek, ‘picros’ means bitter, while ‘rhiza’ means root. The specific epithet of plant is taken from the Punjabi name of the plant ‘Karu’, which means bitter (Coventry 1927). It is a perennial, more or less hairy herb. Rhizome is cut into small pieces, 2.5–8 cm long and 4–8 mm thick, sub-cylindrical, straight or slightly curved, externally grayish-brown, surface rough due to longitudinal wrinkles, circular scars of roots and bud scales and sometimes roots attached, tip ends in a growing bud surrounded by tufted crown

Fig. 17.10 Kutki

of leaves, at places cork exfoliates exposing dark cortex; fracture, short; odour pleasant; taste bitter (Anonymous 2007c). It is considered as an important medicinal plant which is mostly used in the traditional medicinal system for asthma, jaundice, fever, malaria, snake bite, and liver disorders.

17.2.10.4 Temperament

Hot and dry in second degree (Kabiruddin 2007)

17.2.10.5 Action and Uses

Rhizome is commonly used for medicinal purpose for its *Muqawwi-ī-mi'da* (stomach tonic), *Kāsir-ī-reyāh* (carminative), *Mulayyin-ī-tab'* (mood relaxant), *Daf-ī-Hummā* (antipyretic), *Mukhrij didan-ī-amā* (anthelmintic), *mulattif* (demulcent), and *muhallil* (resolvent) properties. It is used for the treatment of cold diseases, e.g. *Shaqiqa* (migraine), *Nazlāt-ī-Muzminā* (chronic catarrh), and *Waja'al-Mafāil* (rheumatism) and also for *Waja'al-Asnān* (toothache), *Bahaq* (pityriasis), *Bara* (leucoderma), *Zo'f-ī-Mi'dā*, *Zo'f-ī-Hadm* (dyspepsia), *Nafakh-ī-Shikam* (flatulance), *Hummā-ī-Safrāvi* (fever due to yellow bile), *Istisqā* (ascites), etc. (Nasir 1880; Anonymous 2007c).

17.2.10.6 Adverse Effect

Harmful for kidneys and the persons having hot temperament (Nasir 1880)

17.2.10.7 Corrective

Katira (tragacanth gum), Sa'tar (*Zataria multiflora* Boiss.), and Mastagi (*Pistacia lentiscus* L.) (Nasir 1880)

17.2.10.8 Substitute

Qurfā-ī-Qarnful (bark of clove), Ghāriqun (*Agaricus albus*) (Razi 1999; Nasir 1880)

17.2.10.9 Dose

About 500 mg/g (Anonymous 2007c)

17.2.10.10 Compound Formulations

Ayārij Androkhus, *Ayārij Arkāghānis*, *Ayārij Bostus*, *Ayārij Jālinus*, *Ayārij Qilāghoras*; *Habb-ī-Nāfe*; *Mājun Aswad Salim* (Ibn Sina 2010)

17.2.10.11 Bio-active Compounds

The constituents found in *P. kurroa* are collectively known as Kutkin or Pikrolive which is comprised of kutkoside. The major chemical constituents responsible for the biological effects include iridoid glucosides and picroside I and II (Kirti et al. 2013). D-mannitol, Kutkiol, Kutkisterol, and a ketone were also isolated from the rhizome. The leaf contains a parasympathetic stimulant pilocarpine (Khare 2007). *P. kurroa* also has monocyclic phenolic compounds like vanillic acid and apocyanin and phenolic glycosides like picein and androsin. It also contains some important chemical constituents, e.g. carbohydrates, aromatic acids like cinnamic acid, vanillic acid, and ferulic acid (Kumar et al. 2013). 'Picroliv', mainly a glucoside, is one such compound, normally obtained from 3–4-year-old roots and rhizomes of an endangered medicinal plant *Picrorhiza kurroa* (Kutkī) and constitutes an important component of many Indian herbal preparations, used mainly for the treatment of a variety of liver ailments. It is an iridoid glycoside mixture containing 60% picroside I and kutkoside in the ratio of 1:1.5 (Verma et al. 2009).

17.2.10.12 Pharmacological Studies

Current researches on Kutkī (*P. kurroa*) have focused on its anticholestatic, hepatoprotective, immune-modulating, and antioxidant activities (Atal et al. 1986; Subedi 2000). In vitro antihistaminic effect has been proved by Dorsch and Wagner (1991). Picroliv has shown efficacy comparable to silymarin in rodent models of galactosamine, paracetamol, thioacetamide, and CCl_4-induced hepatic damage. Picroliv has also shown choleretic effect in rats and anti-cholestatic effect in rats, guinea pigs, and cats treated with paracetamol and ethinyl estradiol (Verma et al. 2009). Treatments with the ethanol extract of the rhizome in the dose of 600 mg/kg could considerably decrease the high serum levels of blood urea and creatinine in cisplatin-induced nephrotoxicity indicating its nephroprotective effect (Yamgar et al. 2010). Anti-inflammatory effect of *P. kurroa* extract by l3-adrenergic blockade was confirmed, which suggests alteration in cell surface biology by the extract (Pandey and Das 1989). Further it has also been reported to possess antimicrobial, antiulcer, antioxidant, antimutagenic, anticancer effects, etc. (Maria et al. 2015).

17.2.11 Mamiran (*Coptis teeta* Wall.; Family: Ranunculaceae)

17.2.11.1 Vernacular Names

Arabic: *Māmira-chini*; Assamese: *Mishmiteeta*, *Teeta*; Bengali: *Teeta*; Bombay: *Māmiran*; Chinese: *Huang lein*; English: Coptis, goldthread, goldthread root; French: *Coptide*; Hindi: *Māmira, Māmiran*; Malaya: *Choon Lin*; Sanskrit: *Tiktmula*, *Supita*, *hem tantu*, *mishanitita*; Sindhi: *Mahmira*; Sinhalese: *Pitakarosana*; Tamil: *Pitrohini*; Urdu: *Māmirā* (Kirtikar and Basu 2012; Khare 2007; Ghani 1920; Said 1997)

17.2.11.2 Distribution

It occurs in localised areas in Lohit, Dibang Valley, East and West Siang, and Upper Subansiri District of Arunachal Pradesh at an elevation of 2000–3000 m. Outside Arunachal Pradesh it is reported to be cultivated on a limited scale in a certain areas of adjoining Tuensang district of Nagaland. Alos found in Mishmi Hills at the northern frontier of Assam, and it is reported to be cultivated in China (Kirtikar and Basu 2012; Said 1997). However, in recent survey reports, it has been described to be among the endangered species of the plants (Dash 2007).

17.2.11.3 Description in Unani Literature

The drug *mamiran* consists of the root and rhizome of *Coptis teeta* Wall. of Ranunculaceae family. The rhizomes look like curcuma; shape is glandular and curved; colour is blackish yellow. The samples procured from China are considered of good quality; these are known as *mamiran chini* (Kabiruddin 2007).

17.2.11.4 Temperament

Hot and dry in third degree (Kabiruddin 2007)

17.2.11.5 Action and Uses

The rhizome produces *Jāli* (detergent), *Muhallil* (resolvent), and *Muqawwi-ī-basr* (eye tonic) effects locally, and internally it possesses *Kāsir-ī-reyāh*, *Mudirr-ī-Bawl*, *Munaqqi-ī-Dimāgh* (brain tonic), and *stomachic* properties (Nasir 1880). In the Unani System of Medicine, the rhizomes are widely used for ocular ailments. On account of detergent effect, its local application is found effective in *Amraz-ī-Chashm* (diseases of the eye), e.g. *Zo'f-ī-Basr* (low eye vision), *Jālā* (vascular keratitis), and *Phulā* (corneal opacity), and also for skin diseases, e.g. *Baraṣ* (leucoderma), *Bahaq* (pityriasis), *Jarab* (scabies), and black spots on the skin. For its diuretic effect, it is commonly used internally along with *Anisun* (*Pimpinella anisum* L.), in the management of *Yarqān Suddi* (obstructive jaundice) and with some other drugs to treat *Suzak* (gonorrhoea) (Kabiruddin 2007; Nasir 1880).

17.2.11.6 Adverse Effect

It has been described to be harmful for the kidney (Nasir 1880).

17.2.11.7 Corrective

Honey is used for the correction of its toxicity (Nasir 1880).

17.2.11.8 Substitute

Zard Chobā (*Curcuma haridra*) is used as a substitute (Nasir 1880).

17.2.11.9 Dose

About 1–2 g (Kabiruddin 2007)

17.2.11.10 Compound Formulations

It is commonly used as an ingredient in the formulations that are intended to be used locally mainly in the eye ailments and skin disorders. Some important formulations include *Bāsaliqun*, *Kohal al-Jawāhar*, *Kohl-ī-Māmool*, *Kohl-ī-Muqawwi-i-basr*, *Marham zarihi*, and *Zarur Māmirān* (Kabiruddin 1935, 2006; Ibn sina 2010).

17.2.11.11 Bio-active Compounds

The rhizome contains berberine as the major alkaloid (Khare 2007). Other constituents reported are coptin, coptisine, jatrorhizine, worenine, palmatine, epiberberine (Khare 2007; Hui et al. 2014), 13,13a-didehydro-9,10-dimethoxy- 2,3-(methylenedioxy), deoxyaniflorine, quinoxalin-11-one, 2-methyl, hexadecanoic acid, methyl ester, 1,1′-Biphenyl, 3,3′,4,4′,5,5′-hexamethoxy, 9,12-Octadecadienoic acid (Z,Z), methyl ester, pentadecanoic acid, etc., respectively (Payum 2017).

17.2.11.12 Pharmacological Studies

Very few studies have been conducted on the rhizome of *mamiran*. The antidiabetic effect of rhizome has been reported by Hui et al. (2014). Its antioxidant and antimicrobial activities in vitro have been reported by Lone et al. (2014). Coptis and its main ingredient berberine have been shown to produce significant effects on cancer with multiple targets including mitochondrial (Ho et al. 2009).

17.2.12 So'd Kufi (*Cyperus rotundus* L.; Family: Cyperaceae)

17.2.12.1 Vernacular Names

Arabic: *So'd Kufi*; Bengali: *Mutha, musta*; Gujarati: *Moth, nagarmotha*; Greek: Finaras, Qas, Aqarqun; Hindi: *Motha*, *nagarmotha*; Kannada, *Konnari, gadde*; Tamil: *Korai*, *korai kizhangu*; Malayalam: *Muthanga, karimustan*; Marathi: *Moth*, *nagarmoth*, *motha*, *bimbal*; Persian: *Mushk zamin, mushk zere zamin*; Punjabi: *Mutha, motha*; Telugu: *Tungamustalu*; Urdu: *So'd Kufi* (Ghani 1920; Khare 2007; Khan 2012; Kirtikar and Basu 2012)

17.2.12.2 Distribution (*Ja-ī-waqu'a*)

Plant is found as a weed, throughout India, up to the 2000m

17.2.12.3 Description in Unani Literature

So'd Kufi is the rhizome and stolon of *Cyperus rotundus* of Cyperaceae family (Fig. 17.11). Rhizome is bluntly conical shaped with different size, crowned with the remains of stem and leaves forming a scaly covering. Smell is pleasant; colour is dark brown or black externally and creamy yellow inside (Anonymous 2008b).

17.2.12.4 Temperament

Hot and dry in second degree (Nasir 1880)

Fig. 17.11 Shaqaul Misri

17.2.12.5 Action and Uses

Muqawwi-i-a'sāb (nervine tonic), *Muqawwi-ī-dimāgh* (brain tonic), *Kāsir-ī-reyāh* (carminative), *Qābiz* (astringent), *Muḥallil-ī-awrām* (anti-inflammatory), *Mudirr-ī-bawl* (diuretic), *Mudirr-ī-tamth* (emmenagogue), *Daf-ī-Hummā* (antipyretic), *Musakkin-ī-alam* (analgesic), hypotensive, antirheumatic, hepatoprotective (Ghani 1920; Khan 2012; Kabiruddin 2014). It is used in GIT problems including indigestion, sprue, diarrhoea, dysentery, vomiting, rheumatism, inflammations, dysuria, and fever. It is also used as a hypocholesterolaemic drug to manage obesity and related problem (Ghani 1920; Khan 2012; Kabiruddin 2014).

17.2.12.6 Adverse Effect

It is harmful for throat, voice problems, and lungs (Nasir 1880).

17.2.12.7 Corrective

Anisun (*Pimpinella anisum*) and sugar (Nasir 1880)

17.2.12.8 Substitute

Sumbal-ut-tib (*Valeriana officinalis*), Dārchini (*Cinnamomum zylanicum*), and Murr (*Commiphora myrrh*) (Nasir 1880)

17.2.12.9 Dose

About 9 g (Nasir 1880)

17.2.12.10 Compound Formulations

Anqardiā Saghir, *Chandraprabhā Guggul*; *Dawa-i-Bawāsīr*; *Dhamarsā*; *Habb-ī-Kimiyā Ashrat*; *Jawārish Balādur*, *Jawārish Fanjnosh*, *Jawārish Hindi*, *Jawārish Jālinus*; *Mājun Jālinus*; *Roghan Aqrab*, *Roghan Surkh*; *Roghan Nārdin* (Kabiruddin 1935, 2006; Ibn Sina 2010)

17.2.12.11 Bio-active Compounds

Different phytochemical studies on *C. rotundus* revealed the presence of alkaloids, flavonoids, glycosides, furochromones, monoterpenes, sesquiterpenes, tannins, starch, sitosterol, fatty oil containing a neutral waxy substance, linolenic acid, glycerol, and myristic and stearic acids (Dutta and Mukerji 1949; Akperbekova 1967; Ranjani and Prince 2012). The rhizome is also rich in Ca, Mg, Mn and cyperol, camphene, rotunene, rotundenol, rotundone, pectine, essential oil, beta-sitosterol, isocyperol, selinatriene, sitosterol, stearic acid, sugeonol, and sugetriol (Jeong et al. 2000; Sonwa and König 2001; Oladipupo and Lawal 2009; Khan et al. 2011).

17.2.12.12 Pharmacological Studies

Different pharmacological studies on extracts of rhizome including anti-inflammatory, antiarthritic (Sundaram et al. 2008), analgesic, antipyretic (Gupta et al. 1971), tranquilizing (Kilani et al. 2005), anticonvulsant (Pal et al. 2009), antispatic, antiemetic, hypotensive, (Singh et al. 1970), hypolipidaemic (Friedwald et al. 1972), gastroprotective (Guldur et al. 2010), hepatoprotective (Kumar and Mishra 2005), antidiarrhoeal (Uddin et al. 2006), antiobesity (Karnick 1992), antimicrobial (Jigna and Sumitra 2006), antioxidant, cytotoxic, apoptotic (Kilani et al. 2008), wound healing (Puratchikody et al. 2006), antimalarial (Thebtaranonth et al. 1995), anticancer (Mazzio and Soliman 2009), larvicidal (Kempraj and Bhat 2008), anticandida (Duarte et al. 2005), cytoprotective (Zhu et al. 1997) effects, etc. have been reported in a number of studies.

17.2.13 Shaqaqul Misri (*Pastinaca secacul* L.; Family: Apiaceae)

17.2.13.1 Vernacular Names

Arabic: *Al-Siqāqul*, *Shaqāqil*, *Shiqāqul*, *Mishqiqāl*; Bengali: *Satmuli*; English: *Wild Parsnip*; Hindi: *Dudhāli*, *satāli*, *sawāli*, *shakakulmisri*; Malayalam: *Shedeveli*; Marathi: *Safedā Musali*; Persian: *Shaqāqul, gazardashti*; Tamil: *Sadavari*; Urdu: *Jangal Gajar*, *Shaqāq al-Misri* (Anonymous 2007a; Khare 2007).

17.2.13.2 Distribution

The herb is found in Middle East and Southern Europe and imported into India (Anonymous 2007a; Khare 2007).

17.2.13.3 Description in Unani Literatures

Shaqāqul Misri consists of dried rhizomes of *Pastinaca secacul* L. of family Apiaceae (Fig. 17.12). The pieces of rhizomes are slender, varying from 1.0 to 6.0 cm in length and 0.5 to 1.0 cm in diameter. Colour is brown and blackish brown; wrinkled hard after drying; bears clear nodes and internodes, from the nodes arises lateral roots against each groove, and internodes show clear vertical striation. When it is kept in water for sometime, striation disappears, and material becomes cylindrical, flexible, and fleshy. The smell is sweet (Anonymous 2007a).

Fig. 17.12 So'd Kufi

17.2.13.4 Temperament

Hot and dry in second degree (Anonymous 2007a)

17.2.13.5 Action and Uses

Mufarriz-ī-shīr (galactagogue), *Moghaliz-ī-mani*, *Moharrik-ī-bāh* (sexual stimulant), *Mowallid-ī-mani* (spermatogenic) (Anonymous 2007a). It is used as an important ingredient of many Unani compound formulations used in the management of *Zo'f-ī-Bāh* (low sexual desire), *Jaryān* (spermatorrhoea), *Ehtelām* (nocturnal emission), *Surat-ī-inzāl* (premature ejaculation), and oligospermia (Anonymous 2007a; Nasir 1880). Commonly it is used for erectile dysfunction, and seminal debility. It is an effective drug for nursing mothers to increase the production of milk. Its *Murabbā* (preserved form in sugar base) is also used to increase sexual power. It has been described to be decidedly aphrodiasic more especially when preserved with honesy (Ibn Hubal 2005).

17.2.13.6 Adverse Effect

It may cause headache and is considered harmful for the lungs, so a person with lung disorders should avoid this drug (Nasir 1880).

17.2.13.7 Corrective

To avoid its harmful effects, honey should be used as a corrective agent (Nasir 1880).

17.2.13.8 Substitute

Aqer Qerha (*Anacyclus pyrethrum* DC.) for aphrodisiac action (Razi 1999). Other substitutes are Buzidān (*Polygala senega*) and *Habb-ī-Sanobar* (Nasir 1880).

17.2.13.9 Dose

About 3–7 g (Ghani 1920)

17.2.13.10 Compound Formulations

Arq Bahār, *Kalkalānaj Akbar*; *Laboob-ī-Kabir*, *Mājun Sālab*, *Mājun Tālmakhānā*, *Jawārish Kāfoor*; *Yāqooti* (Anonymous 2007a; Ibn Sina 2010; Kabiruddin 2006)

17.2.13.11 Bio-active Compounds

In *Pastinaca secacul* the rhizomes contain volatile oil, β-elemene, β-selinene, germacrone, sesquiterpenoids, etc. (Hashem 2010)

17.2.13.12 Pharmacological Studies

It is one of the neglected plants that have not been taken up by the researchers for clinical and experimental studies. However in view of the interesting pharmacological effects and possible therapeutic potential as described in Unani literature, *Pastinaca secacul* warrant some serious attention of both researchers and physicians.

17.2.14 Sumbul al-Tib (*Valeriana officinalis* L.; Family: Valerianaceae)

17.2.14.1 Vernacular Names

Arabic: *Sumbul-al-tib*; Dutch: *Valerian*; Persian: *Sumbul-ut-tib*; Assamese: *Jatāmānsi, Jatāmānshi*; Bengali: *Jatāmānsi*; English: Muskroot, Indian Spikenard, Spikenard, Capon's tail; French: *Herbe au chat*; German: Augenvirz; Greek: *Phu*; Gujarati: *Bālchad, Jatāmāsi, jatāmāsi, kālichad, kālichhad*; Hindi: *Bālchhar*, *bālchir*, *jatāmānsi*; Kannada: *Jatāmāmshi*, *jatāmānsi*; Kashmiri: *Bhut-jāt, bhutijātt, kukilipot*; Malayalam: *Jatāmānchi, jetāmānshi, jatāmāmshi*; Marathi: *Kalavala*; Oriya: *Jatāmānsi*; Punjabi: *Balchhar, Billilotan, Chharguddi*; Sanskrit: *Atila, bhutajata, jati, mansi, japaswini, jatāmānsi, janāni, jatāmānsi, sukshmapatri*; Tamil: *Jatāmānji, jatāmānshi*; Telegu: *Jatāmānji, jatāmānshi, jatāmsi*; Urdu: *Bālchar, Sumbul-al-tib* (Kirtikar and Basu 2012; Ghani 1920; Khan 2014). The word *Valeriana* might have been derived from the Roman province of Valeria, or from Valerianus, a Roman emperor, or from a certain Valerius who first used the herb as medicine, while other writers believe it came from the Latin word *valere* (to be in health). Two other ancient names are 'nard' and 'phu'. 'Nard' is derived from a Sanskrit word meaning 'strong smell', and 'phu' or 'fu' refers to the usual exclamation of disgust that attends the experience of smelling the dried root. Species are also used especially in India known as Sumbul Hindi or Jatamansi/Nard (*Nardostachys jatamansi*) and Tagar or Nandi/mushk bala (*Valeriana wallichii*) (Kirtikar and Basu 2012).

17.2.14.2 Distribution

The plant is found in Kashmir, North and West Asia, and Europe (Kirtikar and Basu 2012).

17.2.14.3 Description in Unani Literature

The drug *Sumbal-at-Tib* is the rhizome of *Valeriana officinalis* L. of family Valerianaceae (Fig. 17.13). It is blackish yellow bearing many thin fibrous rootlets; size of the rhizome is about a finger joint. The fresh root has no odour, while the dried root smells distinctly unpleasant, akin to old gym socks, due to the presence of isovaleric acid in it (Kabiruddin 2014; Bissett 1994; Fleming 1998).

17.2.14.4 Temperament

Hot in first and dry in second degree (Kabiruddin 2007)

17.2.14.5 Action and Uses

Sumbal-ut-Tib is used medicinally on account of *Mufarreh* (exhilarant), *Musakkin* (sedative), *Muhallil* (resolvent), *Musakhkhin* (calorific), *Mujaffif* (siccative), *Mufattit* (lithotryptic), *Mufatteh* (deobstruent), *Mushtahī* (appetizer), *Musaffi-ī-rukhsār* (face cleanser), *Jāli* (detergent), *Muqawwi-ī-dimāgh* (brain tonic), *Muqawwi-ī-'asāb* (nerve tonic), *Muqawwi-ī-jigar* (liver tonic), *Muqawwi-ī-qalb* (cardiac tonic), *Muqawwi-ī-bah* (aphrodisiac), *Dāf-i-tashannuj* (anticonvulsant), *Kāsir-ī-reyāh* (carminative), *Mudirr-ī-haiz* (emmenagogue), *Munawwim* (hypnotic), and *Mudirr-ī-bawl* (diuretic) activities that have been attributed to it (Nasir 1880; Khan 2014). It has been used as a medicine since the time of ancient Greece and Rome. Its properties were described by Hippocrates and Galen. The latter has described it as a remedy for insomnia. Greco-Arab physicians have used it in cases of *Sudā'*(headache), *Nafakh-ī-Shikam* (flatulance), *Istisqā* (ascites), *Yarqān* (jaundice), *Waram-ī-Kabid* (hepatitis), *Waram-ī-Rahim* (metritis), chronic fever, and *Warām-ī-Masānā* (cystitis) (Nasir 1880; Ghani 1920; Khan 2014).

17.2.14.6 Adverse Effect

It may adversely affect the kidney (Nasir 1880).

Fig. 17.13 Sumbul Al-tib

17.2.14.7 Correctives
Katirā (tragacanth gum) is used as corrective (Nasir 1880).

17.2.14.8 Substitute
Izkhir (*Andropogon schoenanthus*) and Sāzaj Hindi (*Cinnamomum tamala*) are used as its substitutes (Nasir 1880).

17.2.14.9 Dose
About 4 ½ g (Ghani 1920)

17.2.14.10 Compound Formulations
V. officinalis is one of the important ingredients of many Unani formulations, e.g. *Anoshdāru*, *Anoshdāru Lulvi*; *Asānāsiā Saghir*, *Asānāsiā Kabir*; *Ayārij-ī-Fiqrā*; *Barshāshā*; *Dawā al-Kibrit*, *Dawā al-Kurkum Kabir*, *Dawā al-Kurkum Saghir*, *Dawā al-Misk Har Jawahar wali*; *Dawā al-Misk Har sada*; *Habb-ī-Barmaki*, *Habb-ī-Ghāfis*, *Habb-ī-Kimiyā Ashrat*; *Jawārish Anārain*, *Jawārish Fanjnosh*, *Jawārish Hindi*; *Jwarish Mastagi ba Nuskhā Kalān*, *Jawārish Ood Tursh*, *Jawārish Ood Shirin*, *Jawārish Shahre Yarān*; *Kohal-ī-Roshnāi*, *Kohal al-Jawahar*, *Kohal-ī-kafoor*; *Mājun Abi Muslim*, *Mājun Masriditoos*; *Qurs Anisun*, *Qurs Rozniyun*; *Roghan Qust*, *Roghan Kalān*, *Roghan Bābunā Qawi*, *Sufuf-ī-Mohazzil*, *Zimād-ī-Sumbal-ut-tib* (Kabiruddin 1935; Ibn Hubal 2005; Ibn Sina 2010).

17.2.14.11 Bio-active Compounds
V. officinalis is an important source of various chemical compounds, viz. valerenic acid, valepotriates, alkaloids, flavonoids, lignans, essential oil, caffeic and chlorogenic acids, â-sitosterol, tannins, choline, resinous matter, etc. (Anonymous 2008b; Shahzad and Taiba 2015; Barnes et al. 2002). The major flavonoids present in *V. officinalis* are linarin (Fernandez et al. 2004), methylapigenin, and hesperidin (Mariel et al. 2003; Fernandez et al. 2004). Alkaloidal constituents contained in it include chantinine, valerine, valerianine, actinidine, and methyl-2-pyrrole ketone (Torssell and Wahlberg 1967; Franck et al. 1970; Janot et al. 1979; Duke 1985).

17.2.14.12 Pharmacological Studies
Valerian extract has been demonstrated to possess various pharmacological actions such as hypotensive (Morazzoni and Bombardelli 1995), antiarrhythmic (Petkov 1979), anticoronaryspastic, antibronchospastic (Circosta et al. 2007), antidysmenorrheal (Mirabi et al. 2011), anxiolytic (Hattesohl et al. 2008; Murphy et al. 2010), sedative, and anticonvulsant (Veith et al. 1986) on different experimental animals. Most of the findings are in consonance with cardiovascular effect as described in Unani literature, but many other effects as discussed above are still to be validated.

17.2.15 Waj (*Acorus calamus* L.; Family: Acoraceae)

17.2.15.1 Vernacular Names

African: *Kalmoes*; Arabic: *Waj, Ood al-Rih*; Barma: *Linhe*, *Bach*; Bengali: *Bach*; Chinese: *Che Ts'ang P'ou, Pai Chang*; Deccan: *Gandkilakri*; Dutch: *Kalmus, zwanenbrood*; English: Sweet Flag, cinnamon sedge, poison flag, blue flag; French: *Acore*; German: *Ackermagen, kalmus, karmes, karmsen, kolmas*; Gujarati: *Ghoduvaj, ghodvach, gandhilovaj*; Hindi: *Bach, ghorbach, gorbach*; Italian: *Acoro, acoro aromatic*; Kannada, *Baje* and *narru berua*; Kashmir: *Vahigand*; Malayalam: *Vayambu*; Marathi: *Vaca, vekhanda*; Persian: *Agar Turki*; Punjabi: *Varch, ghodavaca*; Sanskrit: *Bhadra*; *bhutnashini*, *jalaja*, *sda grantha*, *sdaparvika*, *ugra gandha*; Sinhalese: *Wadakaha*; Spanish: *Acoro, acoro verdadero*; Tamil: *Pillai maruntho*, *vasambu*; Telugu: *Vasa*; Urdu: *Waj Turki* (Anonymous 2008b; Jayaweera 1981; Kirtikar and Basu 2012)

17.2.15.2 Distribution

Distributed throughout the tropics and subtropics, especially in India and Sri Lanka, grown in marshy and moist places throughout India, ascending the Himalaya up to 1800 m in Sikkim (Anonymous 2004). Commonly found in India, Southern Russia, former Yugoslavia, Japan, China, Ceylon, and the Philippine Island (Jayaweera 1981)

17.2.15.3 Description in Unani Literature

Waj is botanically equated to rhizome of *Acorus calamus* L. which belongs to the family Acoraceae (Fig. 17.14). The plant grows near wet places. It has a branched and aromatic root or rhizome (underground horizontal stem of a plant that produces roots) from which rise its long erect leaves. Rhizomes look like Iris root; the roots have a specific aromatic and agreeable odour, sharp pungent, and bitter taste; the leaves smell similar to lemon. Internally the root stalk is whitish and has a spongy texture. The swordlike leaves of the plant resemble those of other similar plants so much that before the *Acorus calamus* is in flower, it is difficult to recognize it simply by the appearance of its leaves. The plant is mentioned by many of the great classical writers on medicine, from Hippocrates (460–377 BC), Theophrastus (371–287 BC), and Galen to Ibn Sina, Razi, and Ibn Baitar (Ibn Sina 1998; Razi 1999; Ibn Baitar 2003; Ibn Hubal 2005).

17.2.15.4 Temperament

Hot and dry in second degree (Kabiruddin 2007)

17.2.15.5 Action and Uses

The rhizomes are *Jāli* (detergent), *Muhallil* (resolvent), *Mufatteh* (deobstruent), and *Mulattif* (demulcent) and considered to possess *Dāf-ī-tashannuj* (antispasmodic), *Kāsir-ī-reyāh* (carminative), and *Qātil-ī-didān* (anthelmintic) activities. It is used to treat *Sar'* (epilepsy), *Sahr-ī-Muzmin* (chronic insomnia), *Nazlā Muzmin* (chronic coryza), *Sudā'-ī-Muzmin* (chronic headache), *Nafakh-ī-Shikam* (flatulence),

Fig. 17.14 Waj Turki

Ishāl-ī-Muzmin (chronic diarrhoea), *Pechis* (dysentery), *Dīq al-Nafas* (asthma), *Hummā* (intermittent fevers), etc. (Ghani 1920; Kabiruddin 2007). According to Dioscorides, the smoke of *Acorus calamus* is taken orally through a funnel to relieve cough. It resolves the hardness of spleen and relieves chest pain which occurs due to cold. Due to its demulcent, anti-inflammatory, and emmenagogue effect, the sitz bath in the decoction of acorus is very useful in case of uterine pain (Kabiruddin 2007).

17.2.15.6 Adverse Effect

It has been described to be not suitable for the brain although many physicians have described it to be a good brain tonic and memory improver (Ibn Hubal 2005).

17.2.15.7 Corrective

Saunf (*Foeniculum vulgare*), Sikanjbin, Zira (*Carum carvi* L.), and Zaravand (*Aristolochia* spp.) (Nabi 2007; Ibn Hubal 2005)

17.2.15.8 Substitute

To resolve flatus and cold diseases of the spleen and liver, *kamoon* (*Cuminum cyminum*) in equal weight as that of *Waj* and *rewand* (*Rheum emodi*) weighing its one third mixed together is used as a substitute (Razi 1999).

17.2.15.9 Dose

About 1–3 g (Kabiruddin 2007)

17.2.15.10 Compound Formulations

Amrosiā; *Anqardiā Kabir*, *Anqardiā Saghir*; *Banādarituus Akbar*; *Itrifal Kabir*, *Itrifal khabs-ī-akbar*; *Mājun Harmus*, *Mājun Nisiyān*; *Roghan Surkh, Roghan Balādur* (Kabiruddin 1935, 2006; Ibn Sina 2010)

17.2.15.11 Bio-active Compounds

The major chemical components of *Acorus calamus* L. are alkaloid (choline), glucosides (acorine and calamine A), and volatile oil (in oil cells), consisting of sesquiterpene and phenyl propanes, asarone, palmitic and heptoic acids, ester of palmitic acid with some pinene, camphene, aldehyde, eugenol, calamine, calamerol, and calameon (Jayaweera 1981).The important constituents of Indian calamus oil are α-asarone (up to 82%) and its β isomer; other constituents are calamene, calamenol, calamenone, eugenol, methyl eugenol, α-pinene, camphene, and palmitic acid (Chopra et al. 1980; Anonymous 2005).

17.2.15.12 Pharmacological Studies

The active ingredients of calamus are not the most stable of compounds. They deteriorate within a few years, leaving the herb useless. Recent researches proved its anticonvulsant, analgesic (Jayaraman et al. 2010), and memory-enhancing activities. Studies have shown that calamus is mutagenic (increases the number of mutations above those found in the natural state) in bacteria. There is also a risk of hypertensive reactions if taken with monoamine oxidase inhibitors (MAOIs). In vitro and in vivo studies have shown *Acorus calamus* oil to induce malignant tumours, due to β-asarone. In mice, the root extract of *Acorus calamus* produced protective effect against acrylamide-induced neurotoxicity and reduced the incidence of paralysis (Shukla et al. 2002).

17.2.16 Zanjabil (*Zingiber officinale* Rosc.; Family: Zingiberaceae)

17.2.16.1 Vernacular Names

Arabic: *Zanjabil, Zanjabil Ratab, Qafir*; Assamese: *Ada*; Bengali: *Ada, saunth*; English: Ginger; Gujarati: *Sunth, sundh*; Greek: *Hotiyun*; Hindi: *Adrakha, sonth, ada*; Kannada: *Alla, hasisunti, shunthi*; Kashmiri: *Sho-ont*; Malayalam: *Andrakam, inchi*; Marathi: *Ardrak, ale*; Oriya: *Oda, sunthi*; Persian: *Sahangvez, zanjabil taza, zanjafil*; Punjabi: *Adrak, adi, sonth*; Sanskrit: *Ausadha, mahausadha, nara, srngavera, visva, visvabhesaja, visva, Visvausadha*; Sinhalese: *Inguru, sidhinguru;* Suryani: *Zangbil*; Tamil: *Chukku, lakottai, sukkh, allam, inji*; Telegu: *Allamu, allam, sonthi, sonthi*; Urdu: *Adrak, Sonth* (Ibn Baitar 1986; Kirtikar and Basu 2012; Khare 2007)

17.2.16.2 Distribution

Plant is native to Southeast Asia. It is widely cultivated in India, especially in Andhra Pradesh, Kerala, Uttar Pradesh, Maharashtra, and West Bengal (Khare 2007).

17.2.16.3 Description in Unani Literature

Zanjabil and *Sonth* consist of dried rhizome of *Zingiber officinale* Rosc. of Zingiberaceae family (Fig. 17.15). The fresh rhizome is known as Zanjabil and the dried one is called *Sonth*. Dried rhizomes are available as a whole or in pieces of

Fig. 17.15 Zanjabil

5–15 cm long, 1.5–6.5 cm wide, and 1.0–1.5 cm thick. Odour is characteristic with pungent taste like *Filfil seyah* (*Piper nigrum*). It is collected in January–February, buds and roots removed, soaked overnight in water, decorticated, and sometimes treated with lime and then dried (Anonymous 2007c; Ibn Baitar 1986).

17.2.16.4 Temperament

Hot and dry in third degree (Anonymous 2007c)

17.2.16.5 Action and Uses

Rhizome possess *Kāsir-ī-reyāh* (carminative), *Hāzim* (digestive), *Munaffis-ī-balgham* (expectorant), *Jāli* (detergent), *Mulayyin* (laxative), *Musakhkhin* (calorific), *Daf-ī-qai* (antiemetic), *Mushtahī* (appetizer), *Mufatteh Sudad* (deobstruent), *Man-ī-nafakh* (antiflatulent), *Muhallil* (anti-inflammatory), *Mujaffif* (siccative), *Muqawwi-ī-a'sab* (nervine tonic), *Muqawwi-ī-Hafiza* (Memory tonic), *Dāf-ī-tashannuj* (antispasmodic), *Muharrik-ī-nizām-ī-daurān-ī-khoon* (circulatory stimulant), and *Mu'arriq* (diaphoretic) effects (Ghani 1920; Kabiruddin 2007; Ibn Hubal 2005; Ibna Baitar 1986). It is therapeutically used for the treatment of *Zo'f-ī-a'sab* (weakness of nerve), *Fālij* (hemiplagia), *Laqwā* (Bel's palsy), *Zo'f-ī-ishteha* (loss of appetite), *Su-ī-hazm* (indigestion), *Nafakh-ī-shikam* (flatulence), *Humuzat-ī-Mi'da* (acidity), *Waj-al-Mi'da* (abdominal pain), *Zo'f-ī-Bāh* (sexual weakness), *Waja'al-Mafasil* (arthritis), *Waja'al-Qutn* (backache), *Su'āl* (cough), *Dīq al-Nafas* (asthma), *Qai* (vomiting), *Sailan-ur-Rahim* (leucorrhoea), etc. Locally it is applied as *surma* (salve) to increase eyesight. Mastication of Zanjabil with *Mastagi* is helpful in removing phlegmatic humour from the brain (Ghani 1920; Kabiruddin 2007; Ibn Hubal 2005; Ibna Baitar 1986; Khan 2012).

17.2.16.6 Adverse Effect

It is harmful in acute diseases of the throat (Nasir 1880).

17.2.16.7 Corrective
Roghan badam (almond oil) and honey (Nasir 1880)

17.2.16.8 Substitute
Filfil Daraz (*Piper longum*), Filfil Safed (*Piper nigrum*), and Aqer Qerha (*Anacyclus pyrethrum* DC.) (Nasir 1880)

17.2.16.9 Dose
About 7 g (Nasir 1880)

17.2.16.10 Compound Formulations
Chandraprabhā Guggul; *Dawā al-Misk Hār sādā*, *Dawa al-Misk Hār Jawāhar wali*; *Dawā-ī-Bawāsīr*, *Dwa-ī-Quwā-ī-Arba*; *Habb-ī-Ambar Momyāi*, *Habb-ī-Hiltit*, *Habb-ī-Hindi Muhallil*, *Habb-ī-Hindi Ziqi*, *Habb-i-Gule Akh*; *Habb-ī-Kabid Naushadri*, *Habb-ī-Miskin Nawāz*, *Habb-ī-Mushil Dimāghi*, *Habb-ī-Pachlonā*, *Habb-ī-Papita*, *Habb-ī-Papita Wilayati*, *Habb-ī-Shifa*, *Habb-ī-Tursh Mushtahī*; *Itrifal Kabir*; *Jawārish Bisbasa*, *Jawārish Fanjnosh*, *Jawārish Jālinus*, *Jawārish Kamooni*, *Jawārish Kamooni Kabir*, *Jawārish Kamooni Mushil*, *Jawārish Narmushk*, *Jawārish-ī-SafarJāli Qābiz*, *Jawārish Shahre yaran*, *Jawārish Tamarhindi*, *Jawārish Utraj*, *Jawārish Zanjabil*; *Kohal-ī-Roshnāi*; *Luboob Kabir*, *Luboob Saghir*; *Mājun Aqrab*, *Mājun Balādur*, *Mājun Bandkushād*, *Mājun Falāsfa*, *Mājun Fanjnosh*, *Mājun Jograj Gugal*, *Mājun Kallalanaj*, *Mājun Lana*, *Mājun Muluki*, *Mājun Muquil*, *Mājun Nānkhwah*, *Mājun Piyāz*, *Mājun Sā'lab*, *Mājun Sir Alvi Khāni*, *Mājun Suhāg Sonth*, *Mājun Supāripāk*, *Mājun Suranjān*; *Murabbā Zanjabil*; *Iyārij Loghāziā*; *Roghan Ispand*, *Roghan Gule Ākh*, *Roghan Jauzmāsil*; *Sufuf Hāzim Kalān*, *Sufuf Mushil*, and *Sufuf Qaranful* (Anonymous 2007d, Kabiruddin 1935)

17.2.16.11 Bio-active Compounds
Volatile oil contains cineole, zingiberol, sesquiterpene-like zingiberene, bisobolene and sesquiphellandrene, and gingerol in the oleo-resin (Anonymous 2007d). It also contains a number of antioxidants such as ascorbic acid, beta carotene, alkaloids, terpenoids, and poly phenols such as flavonoids, flavones, glycosides, etc. (Bartley and Jacobs 2000). Total flavonoids and some flavonoid components including rutin, quercetin, epicatechin, catechin, naringenin, and kaempferol were extracted from the leaves and rhizomes of *Z. officinale* (Ali et al. 2010). Pungency is due to gingerol an oily liquid of homologous phenol and many minor compounds of the same group (Afaq et al. 2011).

17.2.16.12 Pharmacological Studies
Investigations have shown gingerol and shogoal to be mutagenic (Nagbhushan et al. 1987). According to various studies, it has been reported for its nephroprotective (Ajith et al. 2008), hepatoprotective (El-Sharaky et al. 2009), and detoxifying effect against alcohol abuse (Shati and Elsaid 2009), etc. In a clinical study, it has been

shown to reduce the symptoms of osteoarthritis of the knee (Altman and Marcussen 2001).

17.2.17 Zarambad (*Curcuma zedoaria* (Christm) Rosc.; Family: Zingiberaceae)

17.2.17.1 Vernacular Names

Arabic: *Arq al-Kāfoor, Arq al-Tayyeb; Zarambād*; Bengali: *Suthā*; English: White turmeric, zedoary, Zerumbet; Greek: *Qalamartun*; Hindi: *Kachoor, kachurā, sunthi*; Tamil: *Kichilikihangu, pulankihangu*; Persian: *Kasoor, kasr-ī-ward*; Sanskrit: *Dravidā, durlabhā, gandhmulakā, jatalā, kalpakā, shāthi*; Urdu: *Zarambad* (Khare 2007; Kirtikar and Basu 2012; Kabiruddin 2007; Khan 2013)

17.2.17.2 Distribution

The plant is found throughout India from the Himalayas to Southwards, Bengal, Chittagong, Kerala, and Konkan (Srivastava et al. 2011; Khare 2007).

17.2.17.3 Description in Unani Literature

Zarambād is a fragrant rhizome of *Curcuma zedoaria* which belongs to the family Zingiberaceae (Fig. 17.16). It resembles *So'd kufi* (*Cyperus rotundus*) very much but something that is big in size and less in fragrance (Ibn Hubal 2005). Leaves look like ginger leaves. Externally it appears ashy and internally yellowish in colour; taste bitter and sweet like ginger. The rhizomes are large and fleshy. They are cut into thin transverse sections and dried for marketing. Dried slices are usually of a grayish buff colour and possess an agreeable musky odour with a camphorous note (Anonymous 2007e; Khan 2013).

17.2.17.4 Temperament

Hot and dry in third degree (Kabiruddin 2007)

17.2.17.5 Action and Uses

In Unani classics the rhizomes have been described to be used for its *Mufarreh* (exhilarant), *Mulattif* (demulcent), *Muharrik* (stimulant), *Muḥallil-ī-awrām* (anti-inflammatory), *Mufatteh sudad* (deobstruent), *Muqawi-ī-qalb* (cardiotonic), *Muqawwi-ī-dimāgh* (brain tonic), *Muqawwi-ī-mi'da* (stomachic), *Muqawwi-ī-jigar* (liver tonic), *Muqawwi-ī-bāh* (aphrodisiac), *Mutayyeb-ī-dahan* (mouth freshener), *Daf-ī-ta'ffun* (antiseptic), *Muhammir* (rubefacient), *Kāsir-ī-reyāh* (carminative), *Munaffis-ī-balgham* (expectorant), *Mudirr-ī-bawl* (diuretic), *Mudirr-ī-haiz* (emmenagogue), *Naf-ī-wahshat* (antianxiety), and *Mushil-ī-sawdā* (purgative of black bile) properties (Khan 2013; Kabiruddin 2007, Nasir 1880; Ibn Baitar 1986). It is used for the treatment of psychological disorders, cardiac diseases, anxiety, palpitation, menstrual disorders, dyspepsia, vomiting, flatulence, diarrhoea, etc. Locally a paste is applied to reduce pain and inflammation, remove black spots on the face, and treat

Fig. 17.16 Zarambaad

acne, headache, and migraine (Khan 2013; Kabiruddin 2007, Nasir 1880; Ibn Baitar 1986).

17.2.17.6 Adverse Effect

It may cause headache (Nasir 1880).

17.2.17.7 Corrective

Banafshā (*Viola odorata*), Sandal (*Santalum album*), Sumbal-ut-tib (*Valeriana officinalis*); Darunaj Aqrabi (*Doronicum hookeri*) (Nasir 1880; Ibn Baitar 1986)

17.2.17.8 Substitute

Shitraj Hindi (*Plumbago zeylanica*) is used as a substitute in cases of poisonous insect bites and Darunaj Aqrabi (*Doronicum hookeri*) for flatulence. Other substitutes are *Jangali kasni* (*Traxacum officinalis*), *Tukhm Turanj* (*Citrus medica* seeds), and *Buzidān* (*Polygala senega*) (Razi 1999; Ibn Hubal 2005; Nasir 1880).

17.2.17.9 Dose

About 1–3 g (Kabiruddin 2007) and 07 gm (Nasir 1880)

17.2.17.10 Compound Formulations

Buzurg Dāru; *Dawā al-Misk Hār Jawāhar wāli*; *Dawā al-Misk Hār sādā*; *Dhamarsā*; *Faloniā Fārsi*; *Halwā-ī-Chobchini*; *Jwārish Mastagi Ba Nuskhā Kalān*; *Marham Muqil*; *Qantarghan Asghar*; *Roghan Balādur*, *Roghan Kalān*, *Roghan Mujarrab*, *Roghan Surkh*; *Sufuf Chutki*, *Sufuf Khadar Jadid* (Kabiruddin 1935, 2006; Ibn Sina 2010)

17.2.17.11 Bio-active Compounds

The rhizome contains several flavonoid glycosides and curcumin. The volatile oil of zerumbet contains about 13% monoterpenes and several sesquiterpenes of which humulene and zerumbone are major constituents. The major constituents of

monoterpenes are camphene, zingebrine, camphor, and zedoarine (Jayaweera 1981). Unlike the oil of *Z. officinale*, Zerumbet oil does not contain any methyl heptanone; instead, it contains camphor. Dried rhizomes contain a number of terpenoids, including curcumenone, curcumene, curcumenol, curdione, furanogermenone, curzerenone, germacrone, germacrone epoxide, a volatile oil (1.0–1.5%) resembling ginger oil, and starch (50%) (Khare 2007). New zedoarofuran, sesquiterpenes, neocurcumenol, 4-epicurcumenol, gajutsulactones A and B, and zedoarolides A and B are also obtained from zedoary rhizome (Matsuda 2001).

17.2.17.12 Pharmacological Studies

Anti-amoebic and larvicidal activities have been reported by Raghuveer (2003) and Ansari and Ahmad (1991). Aqueous extract of the rhizome was found to show hepatoprotective activity (Kim et al. 2005). Methanolic extract of the rhizomes showed promising anti-inflammatory activity in experimental models (Makabe 2006; Chihiro 2006). The germacrone, germacrone epoxide, sesquiterpenes, curcumenol, and curzerenone showed CNS depressant properties (Khare 2007). Ethanolic extract of *C. zedoaria* showed inhibitory effect against human ovarian cancer (OVCAR-3 cells) and also evaluated for its antitumor and enzymatic actions in vitro (Syu et al. 1998). Antimicrobial effect has been reported by Wilson (2005).

17.2.18 Zard Chob (*Curcuma longa* L.; Zingiberaceae)

17.2.18.1 Vernacular Names

Arabic: *Urooq al-Asfar, urooq al-Safar, urooq al-Sabaghin, baqla al-Khatātif*; Assamese: *Haladhi, haldhi*; Bengali: *Halaldā, haldhi, haldi, pitras*; English: *Turmeric*; Greek: *Khālidooniyuun, tobagha*; Gujarati: *Halalsa, haldar, halder, haldi*; Hindi: *Halada, haldi, hardi*; Kannada: *Arishina, haldi*; Kashmiri: *Ladhir, ledar, lidar*; Malayalam: *Manjal, mannal, marinallu*; Marathi: *Halad, lalada, haldi, halede*; Oriya: *Haladi*; Persian: *Zard Chob*; Punjab: *Haldar, halija, rajani*; Roman: *Kalidonion*; Sanskrit: *Aneshta, dosa, gauri, haladi, haridra, harita, jagent, khanada, mangalya, manjal, nisa, nisha, nisi, rajani, ratti, varnavat*; Tamil: *Mangal*; Telegu: *Haridra, pasupu, pampi*; Urdu: *Haldi* (Ibn Baitar 1999; Khare 2007; Kabiruddin 2014; Khan 2013)

17.2.18.2 Distribution

Drug-yielding herb extensively cultivated in all parts of the country. The origin of turmeric is believed to have been in Southeast Asia. The cultivated species said to have naturalized in some areas of north-eastern part of India and the island of Java (Anonymous 2007e).

17.2.18.3 Description in Unani Literature

Zard Chob consists of the dried rhizomes of *Curcuma longa* L. of Zingiberaceae family (Fig. 17.17). Leaves look like the leaves of Zarambad (*Curcuma zedoaria*); flowers yellow; seeds black; rhizomes yellow; after collection boiled in water and

Fig. 17.17 Zard Chob

dried. Fresh gives bad smell; therefore, it is dried after 3–4 months and used thereafter (Khan 2013). Rhizomes ovate, oblong or pyriform (round turmeric) or cylindrical (breadth is half than its length), often short-branched (long turmeric), 2–5 cm long and about 1–1.8 cm thick, externally yellowish to yellowish-brown with root scars and annulations of leaf bases; fracture horny, fractured surface orange to reddish brown; central cylinder twice as broad as cortex; odour and taste characteristic. Crop is harvested after 9–10 months; when lower leaves turn yellow, rhizomes are carefully dug up with handpicks between October and April and cured by boiling and dried to preserve.

17.2.18.4 Temperament

Hot and dry in third degree (Kabiruddin 2014; Nasir 1880)

17.2.18.5 Action and Uses

Muhallil-ī-warām (anti-inflammatory), *Musakkin* (analgesic), *Jāli* (detergent), *Mujaffif* (cicatrizing), *Dāf-ī-tashannuj* (anticonvulsant), *Munaffis-ī-balgham* (expectorant), *Mufatteh sudad* (deobstruent), *Qātil-ī-kirm-e-shikam* (anthelmintic), *Muṣaffi-i-dam* (blood purifier) (Nasir 1880; Kabiruddin 2014; Khan 2013). It is used internally for *Su'āl* (cough), *Dīq al-Nafas* (asthma), *Istisqā* (ascites), *Yarqān Suddi* (obstructive jaundice), and *Nazlā* wa *Zukām* (cold and catarrh). Locally it is applied for the treatment of *Quruh* (ulcers), *Waja'al-Mafāsil* (arthritis), *Ramad* (conjunctivitis), *Zo'f-ī-Basārat* (low eye vision), *Jālā* (vascular keratitis), *Phulā* (corneal opacity), *Hikkā* (dry itching), *Jarab* (scabies), and toothache in the form of paste, surma, washing, etc. (Nasir 1880; Kabiruddin 2014).

17.2.18.6 Adverse Effect

It has been described to produce some adverse effect on the heart (Nasir 1880).

17.2.18.7 Corrective

Ābe Limun (lemon juice) and Turanj (*Citrus medica*) are used as correctives to avoid its adverse effect (Nasir 1880; Khan 2013).

17.2.18.8 Substitute

Māmirān (*Coptis teeta*) and Aqer Qerhā (*Anacyclus pyrethrum* DC.) are used as its substitute (Nasir 1880).

17.2.18.9 Dose

About 1–2 g (Kabiruddin 2014)

17.2.18.10 Compound Formulations

Chandraprabhā Guggul; *Halwa-ī-maghz Sar Kunjashk*; *Kohal-al-Jawāhar*; *Marham-ī-Jadwār*; *Roghan Āzam*, *Roghan Dewdār*, *Roghan Hindi*, *Roghan Saikh San'ān*; *Sufuf Asfān* (Kabiruddin 1935, 2006; Ibn Sina 2010)

17.2.18.11 Bio-active Compounds

Rhizome contains essential oil, colouring matter, curcumin, campestrol, isononanoic, isodienoic acid, dehydrocurcumine, fatty acid, deferuloylmethane, camphor, eugenol, cineol, xylose, galactose, glucose, rhamnose, galacturonic acid, etc. (Afaq et al. 2011).

17.2.18.12 Pharmacological Studies

Datta and Sukul (1987) have reported anti-filarial activity of the plant. Mukophadhyay et al. (1982) and Arora et al. (1971) have reported that it possesses an anti-inflammatory activity. It is also reported for its antioxidant (Unnikrishnan and Rao 1995), antiarthritic (Chandra and Gupta 1972), anti-protozoal (Araújo et al. 1998), antibacterial (Chopra et al. 1941), antivenom (Ferreira et al. 1992), anti-HIV (Mazumber et al. 1995), antitumor (Huang et al. 1988), antioxidant (Dikshit et al. 1995), and antidiabetic (Wickenberg et al. 2010; Hong et al. 2004) activities, etc.

17.3 Conclusions and Future Prospects

The rhizomes used in Unani System of Medicine have wide therapeutic potential. Age-old practice of Unani physicians and the healers of other traditional medicines with different rhizomes is the testimony of their efficacy and safety. They possess numerous phytoconstituents which can be used in research for new drug development. Rhizomes have been proved to play a very important role in preventing and curing vast range of diseases, viz. CNS, GIT, CVS, skin, gynaecological and sexual, etc. The review of Unani literature showed that all the rhizomes have hot and dry temperament; therefore, they are useful specially in the management of diseases which arise due to the qualitative and quantitative detargement of *Khilt-i-barid* (cold humours, e.g. phlegm and black bile) such as arthritis, sciatica, hemiplegia, facial palsy, chorea, epilepsy, melancholia, etc. These activities may occur due to a

large number of bio-active substances found in rhizomes which provide a wide spectrum of biological properties. The scientific studies of different rhizomes have validated a number of activities mentioned in Unani classical books, manuscripts, and monographs. Memory enhancer, anti-epileptic, anti-inflammatory, antioxidant, antiseptic activities, etc. are some of the interesting and therapeutically important attributes that the rhizomes have been validated to possess. Further researches are needed to explore the hidden characteristics of the rhizomes that have hitherto not been investigated. Present review on rhizomatous plants of medicinal importance will expose new vistas for the researcher of AYUSH (Ayurveda, Yoga, Unani, Siddha, and Homeopathy) drugs and help the researchers of modern medicine and allied sciences to search for new bio-active compounds and determine their structure and biological activity relationships, in order to find new drugs that can be effective, affordable, less toxic, and useful in the treatment of a number of diseases.

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